

GVP Technical Support Reference Manual

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Section 1

Series I A2000 SCSI Products

The following products are covered in this section:

- A2000-HC (REV 3,4,5) Series I SCSI/Hard Card
- A2000-1/X Series I SCSI/RAM Controller
- A2000-2/X (Rev 1.03, 2A) SCSI/RAM Controller
- A2000-2/X (Rev 1 & 2 1Mb X 1) SCSI/RAM Controller
- A2000-HC2 Series I SCSI/RAM Hard Card
- A2000-8/X Series I SCSI/RAM Controller

The following information is provided on most of these products:

- Jumper defaults
- RAM Setting

Jumper Defaults for A2000 Series I SCSI and RAM Products

A2000-HC Jumper Defaults

Jmpr	Defaults Rev 2,3,4,5	Desc

J1	- Open	- Reserved
J2	- Short	- Rom (AutoBoot) Enabled

A2000-2/X Jumper Defaults

Jmpr	Defaults	Desc

J1	- Short	- Memory Option
J2	- Short	- Memory Option
J3	- Open	- Reserved
J4	- Short	- Rom (Autoboot) Enabled
J5	- Open	- Reserved
J6	- Open	- Reserved
J7	- Open	- Reserved
J8	- Open	- Reserved

Note:

Some models may not have all of the jumpers listed above.

A2000-HC2 Jumper Defaults

Jmpr	Defaults	Desc

J2	- Short	- 2MB RAM Disabled
J3	- Open	- Reserved
J4	- Short	- ROM (Autoboot) Enabled
J5	- Open	- Reserved

A2000-8/X Jumper Defaults

Jmpr	Defaults	Desc
J1	- Short	- Memory Option
J2	- Short	- Memory Option
J3	- Open	- Reserved
J4	- Short	- ROM (Autoboot) Enabled
J5	- Open	- Reserved
J9	- Short	- Memory Option
CN11	- Left Short	- Reserved (Toward Amiga Front)

RAM Settings for A2000 Series I SCSI and RAM Products

A2000-2x RAM Settings Chart

Rev 2B - 1MBx1 Chip

MEMORY	J1	J2
0	- Short	- Short
2	- Open	- Short

Rev 2A - 256x4 Chip

MEMORY	J1	J2
0	- Short	- Short
1	- Short	- Open
2	- Open	- Short

Rev 1.03 - 256x4 Chip

MEMORY	J1	J2
0	- Short	- Short
1	- Short	- Open
2	- Open	- Short

A2000-HC2 RAM Settings Chart

MEMORY	J2
0	- Short
2	- Open

A2000-8x RAM Settings Chart

MEMORY	J1	J2	J9
0	- Short	- Short	- Open
2	- Short	- Short	- Open
4	- Short	- Open	- Open
6*	- Open	- Open	- Open
8	- Open	- Short	- Open

Note: Requires 'Addmem 800000 9FFFFFF' to be added to startup-sequence to recognize last 2MB of RAM.

Section 1

Series I A2000 SCSI Products

Extra Notes:

Section 2

Series I A500 SCSI Products

The following products are covered in this section:

A500 IMPACT - Series I SCSI/RAM Sub-System
A500 2/X - Autoboot/RAM card for A500 Impact
A500 IMPACT HD4 - Series I SCSI/RAM-Sub System

The following information is provided for these products:

Jumper Defaults
RAM Settings

Jumper Defaults for Series I A500 Sub-System Products

A500-2/x AutoBoot Card Jumper Defaults

Jmpr	Defaults Rev 2/Rev 4	Desc

J1(x)-	Short/Short	- RAM Disable (Open=2MB)
J2(x)-	Short/Short	- Reserved
J3(x)-	Short/Short	- ROM (AutoBoot) Enable

Notes:

EPROM Sockets - Even = U35, Odd = U34

A500-HD4 Jumper Defaults

Jmpr	Defaults	Desc

J1	- Short	- Memory Option
J2	- Short	- ROM (AutoBoot) Enabled
J3	- Short	- Memory Option
CN4	- N/A	- Power LED, Neg. Toward 86-pin Connector

RAM Settings for A500 Series I Sub-Systems

A500-HD RAM Settings Chart

A500-2/x card, Rev 2 & 4

MEMORY	J1

0	- Short
2	- Open

Notes: Rev 2 card has 'x' after jumper number and 16 inline RAM sockets. Rev 4 card has a 4 X 4 socket layout. Both use 16 pieces of 1MB X 1 80ns DIP Memory

A500-HD4 RAM Settings Chart

MEMORY	J1	J3

0	- Short	- Short
2	- Open	- Short
4	- Short	- Open

Section 2

Series I A500 SCSI Products

Extra Notes:

Section 3

Series II A2000 SCSI Products

The following products are covered in this section:

A2000-HC8 Series II SCSI/RAM Hard Card
A2000-RAM8 8MB RAM Half Card
A2000-HC/II Series II SCSI Hard Card

The following information is provided on these products:

Jumper defaults
RAM settings (if applicable)
PCB Histories
Troubleshooting tips

A2000 Series II SCSI and RAM Controller Products

Initial Product Release: August 1990

All boards are based upon the GVP Dual Port RAM Controller (DPRC) chip.

The first boards released were the HC/II and HC8, and was followed by the RAM-8 Amiga 2000 RAM Only card. These products have proven to be one of the best on the market in terms of both hardware and software compatibility.

The disk controllers use a DMA data transfer method. The HC8 design can fully use any on-board RAM more efficiently than any other RAM/Controller design known. This is because the DPRC custom chip design permits data transfers to and from the on-board RAM section (if present) to occur with little or no blocking of other Zorro II DMA or 68000 processor accesses to the same RAM. This allows better system performance in cases where the disk controller is loading data into Fast RAM and system load is high. Data transfer to other 24-bit (Zorro II) Fast RAM or Chip RAM is handled via the normal Zorro II bus request protocol.

It should be noted that this design does not have the flaw that certain early DMA designs had, where data was lost or corrupted under heavy graphics load, or caused crashes when accessing DMA'able 32-bit RAM on high-speed accelerators.

The maximum sustained transfer rate of the A2000 Series II controllers is approximately 3.5MB/sec., which is the DMA bandwidth limit of the A2000 bus. The best recorded performance of this controller with available disk drives is 2.35MB/sec in a stock system, SCSI direct. Only slightly lower performance is was seen under AmigaDOS FastFileSystem due to the file system code overhead.

Jumper Defaults for Series II SCSI and RAM Products

A2000-HC8 Jumper Defaults

Jmpr	Defaults	Desc
LED	- XXX	- Disk Activity Indicator. Pin 1/3=Red (+).
J2	- 1/2*	- 33C93(a) Controller Clock Option. See Note.
J3	- Open	- Reserved.
J4	- Short	- ROM (Autoboot) Enabled.
J5	- Open	- Memory Option.
J6	- Open	- Memory Option.
J7	- Short	- Memory Option.
J8	- Open	- Memory Option.
J9	- Short	- Memory Option.
J10	- Open	- Reserved.
J11	- Open	- Reserved.
J12	- Open	- Reserved.
J13	- 2/3	- Reserved (Clock Option, early boards).
J14	- Open	- Memory Option (N/A until Rev 5 PCB).
J15	- Open**	- DTACK Pullup (N/A until Rev I PCB).

Notes:

- * - 1/2 Selects 7Mhz. 2/3 Selects 14Mhz. 33C93 SCSI chip may only be clocked at 7Mhz. 33C93A SCSI chip may be clocked at either rate. As of v4.5 gvp SCSI device, 14Mhz must be selected if SCSI chip is 33C93A.
- ** - Rev 5 PCB has jumper, but pullup value is not optimal. For earlier revisions, refer to Commodore Technical Bulletin #25 for updating Rev 4.x Motherboard PCBs to revision 4.5. This is usually needed on Rev 4.3 and earlier B2000 motherboards.

A2000-RAM8 Jumper Defaults

Jmpr	Defaults	Desc
J3	- Open	- Reserved.
J5	- Open	- Memory Option.
J6	- Open	- Memory Option.
J7	- Short	- Memory Option.
J8	- Open	- Memory Option.
J9	- Short	- Memory Option.
J10	- Open	- Memory Option.
J15	- Open	- DTACK Pullup (N/A until Rev 4 PCB).

RAM Settings Charts for Series II HC8 and RAM8 Products.

A2000-HC8 RAM Settings Chart

MEMORY	J5	J6	J7	J8	J9	J14
0	- Open	- Open	- Short	- Open	- Short	- Open*
2	- Open	- Short	- Open	- Open	- Short	- Open*
4	- Short	- Open	- Open	- Open	- Short	- Open*
6	- Open	- Open	- Short	- Short	- Open	- Open*
8	- Open	- Short	- Open	- Short	- Open	- Open*
8**	- Short	- Open	- Open	- Open	- Open	- Short*

Notes:

* - Jumper not on Revision 2 PCB.

** - Requires 4Mb X 8 RAM module instead of 1Mb X 8 RAM module
Only these modules are inserted in CN16 and CN17. All other
RAM must be removed and/or disabled. Not available on
Revision 2 PCB.

RAM is populated two SIMMs at a time starting at CN10 & CN11, then
CN12 & CN13, and so on.

A2000 RAM-8 Settings Chart

MEMORY	J5	J6	J7	J8	J9	J10
0	- Open	- Open	- Short	- Open	- Short	- Open*
2	- Open	- Short	- Open	- Open	- Short	- Open*
4	- Short	- Open	- Open	- Open	- Short	- Open*
6	- Open	- Open	- Short	- Short	- Open	- Open*
8	- Open	- Short	- Open	- Short	- Open	- Open*
8**	- Short	- Open	- Open	- Open	- Open	- Short*

Notes:

* - Not on Rev 3 PCB

** - Requires 4Mb X 8 RAM module instead of 1Mb X 8 RAM module
Only these modules are inserted in CN16 and CN17. All other
RAM must be removed and/or disabled. This means the DIP RAM
MUST NOT BE INSTALLED.

First 2MB is populated with DIP RAM, then in two SIMM increments
starting at the inboard sockets and populating toward the left for
each additional increment.

A2000-HC/II Jumper Defaults

Jmpr	Defaults	Desc
LED	- XXX	- Disk Activity Indicator. Pin 1/3=Red (+).
J2	- 1/2*	- 33C93(a) Controller Clock Option. See Note.
J3	- Open	- Reserved.
J4	- Short	- ROM (Autoboot) enabled.
J13	- 2/3	- Reserved (Clock Option)

Note:

- * - 1/2 Selects 7Mhz. 2/3 Selects 14Mhz. 33C93 SCSI chip may only be clocked at 7Mhz. 33C93A SCSI chip may be clocked at either rate. As of v4.5 gvpscsi.device, 14Mhz must be selected if SCSI chip is 33C93A.

PCB Histories for Series II Products

HC8 Series II PCB History

- Rev 1 - Prototype
- Rev 2 - Approx. 1000 boards shipped, Aug 90 - Oct 90
- Rev 3 - Prototype
- Rev 4 - Oct 1990 - Added U8 to buffer address lines to RAM.
It is suspected that some RAM types may load the address lines enough to be close to the DPRC's output limits. Added J14 to allow use of two 4Mb X 8 SIMMs (See RAM chart.) Removed J13 (Clock option no longer necessary.)
- Rev 5 - Added J15 to help with DTACK load problem. Adds 1k pullup, but may not be enough. For early motherboards.
- Rev I - Surface mount version of Rev 5, J15 now has proper 470 Ohm pullup value.
- Rev II- 4-Layer version of Rev I, also has through-hole resistor packs components instead of surface mount version.

RAM8 Series II PCB History

- Rev 1,2 - Prototype
- Rev 3 - Initial Release.
- Rev 4 - J15 (DTACK) Pullup added.

HC Series II PCB History

- Rev 1,2 - Prototype
- Rev 3 - 1st Production. 2-Layer PCB.
- Rev 4 - '02' DPRC used, 4-Layer PCB, J5/6/7 Jumpers added.

The HC/II is no longer in production.

Configuring the GVP A2000 RAM-8 Zorro II RAM card.

This board is a natural offspring of the GVP Series II SCSI/RAM product. It supports 2, 4, 6 and 8MB of RAM in a low-cost half card. Compatibility and AM configurations are very similar to the HC8.

To populate the A2000 RAM-8 board with RAM, use the following memory parts for the various memory configurations:

U1 through U16 must be fully populated for all settings EXCEPT 0MB and the special 8Meg RAM/4Meg SIMMs setting. The part type used is the 1MB X 1 DIP 18 pin package, of 100ns or faster. This space is populated for the the 1st 2MB of RAM on the card. Some cards from GVP may have this RAM permanently soldered in.

Remember to look for a bent pin on one or more of the DIP memory chips or a poorly seated SIMM card if you have problems using the board in your system. See also the general Series II Troubleshooting tips.

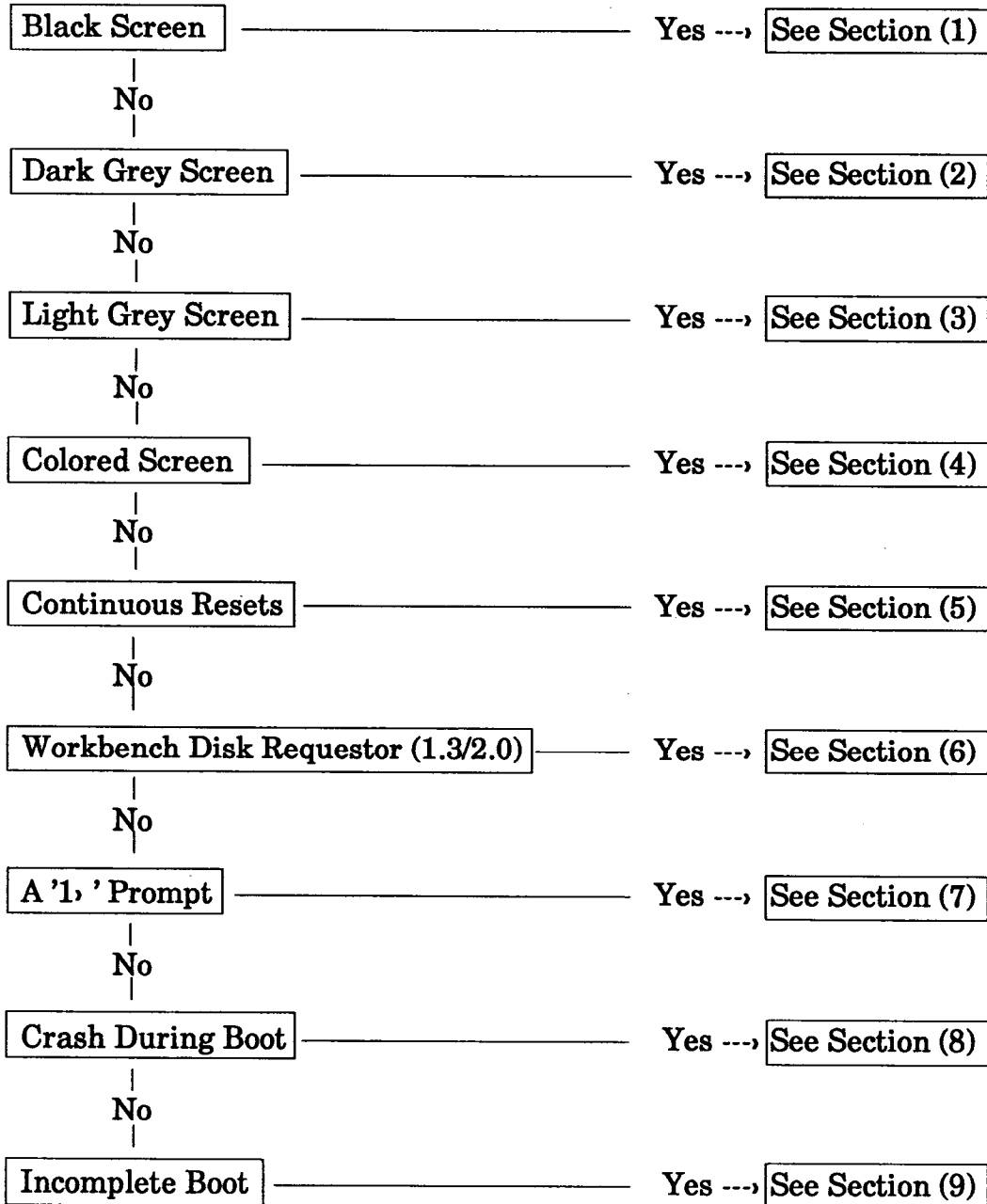
CN12 through CN17 are populated with 1MB X 8 Page Mode RAM SIMMs of 100ns or faster. These are populated with 2 SIMMs at a time from the lower numbered slots to the highest. This space is populated with this type of RAM for the 4MB, 6MB, and 8MB RAM setting. The chips on the SIMMs face away from the board. The U1-U16 Range MUST ALSO be populated.

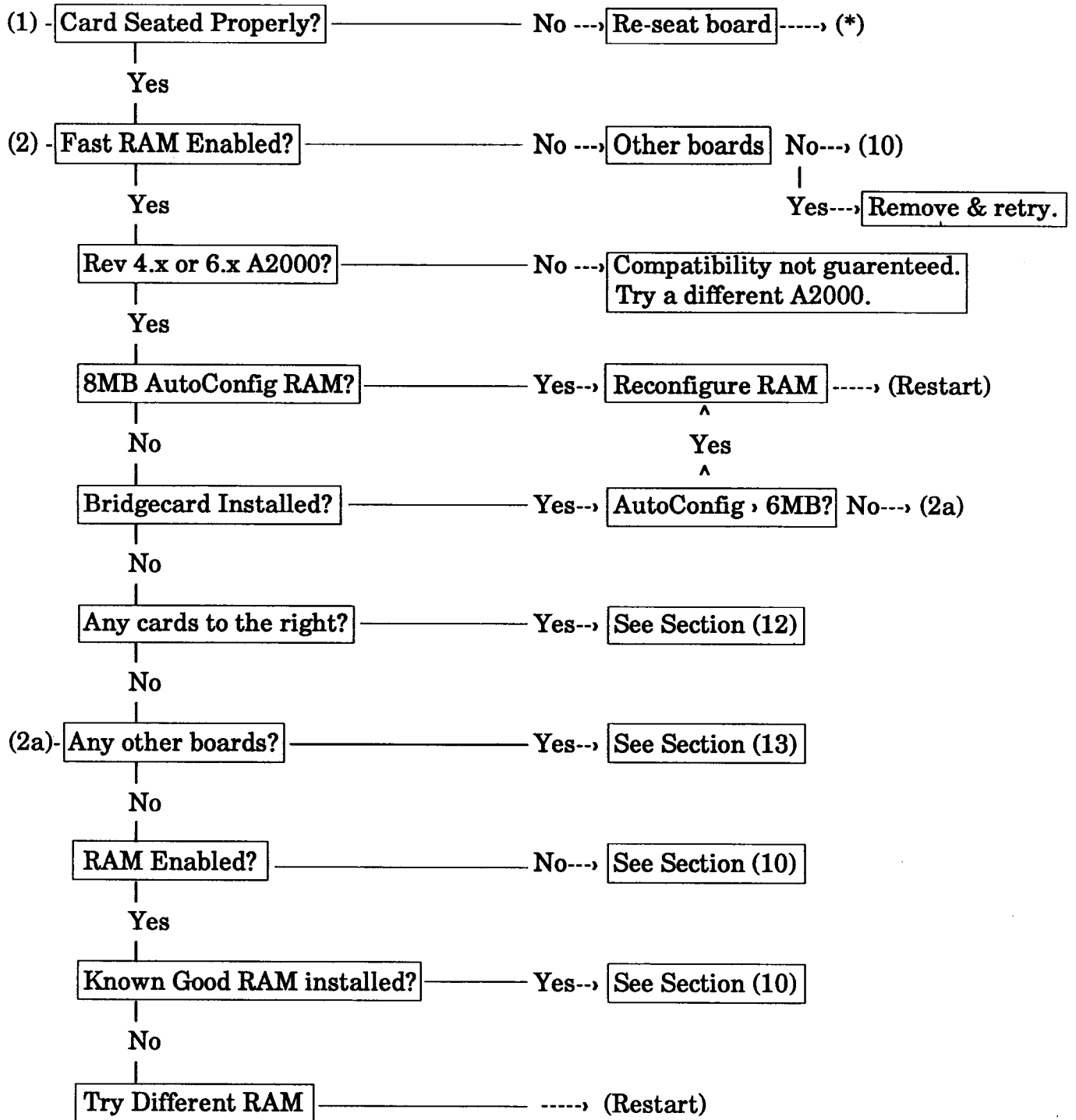
CN12 and CN13 can take 1 4MB X 8 - 4 Meg SIMM each (total of 2) of 100ns or faster, for the special 8Meg RAM/4Meg mode. The chips on the SIMMs face away from the board. The DIP RAM sockets and the remaining SIMM slots are not used.

If necessary, a memory test program is available from the GVP BBS. (215) 337-5815. If the GVP board is the only expansion board in the system, and you have access to memory test program, these are the memory address for each setting. Ranges are in Hexadecimal, and they correspond to the order in which the board is populated:

2MB - 200000-3FFFFFFF
4MB - 200000-5FFFFFFF
6MB - 200000-5FFFFFFF and 600000-7FFFFFFF (A 4MB & 2MB range = 6MB)
8MB - 200000-9FFFFFFF (Either option)

A2000 HC8 Troubleshooting Flowchart





(3) - Disk LED on steady? ————— Yes--> (3a)

No

Disk LED flashes? ————— Yes--> (3b)

No

No Disk LED Activity? ————— Yes--> (3c)

No

Q120/Q240 w/4.6 ROM? ————— Yes--> (3i)

No

Drives work separately? ————— Yes--> (3a)

(3a) - Are drive(s) connected? ————— Yes-->

Is Cable connected properly?

Yes--> (3e)

No

No---> (3d)

Bad cable connection, bad card, or A2000 motherboard is not operating properly.
See section (10)

(3b) - Does a workbench disk request appear after some time has passed? ————— Yes--> (3f)

No

Does it boot after some time? ————— Yes--> (3g)

No

Is there another disk controller or other board in the system? ————— Yes-->

The problem may be the other board. Try removing it and begin again. Contact dealer or Mfg. for help to configure system with more than one disk controller active.

No

See Section (10)

(3c) - Is LED connected? ————— Yes--> (3a)

No

(3d) - Correct the situation and begin again.

(3e) - Is the SCSI bus terminated correctly? ————— Yes--> Has another cable been tried? No--> (3d)

No

Termination Help

(3d)

(3h)

Yes

Try another drive, controller, and/or another Amiga. If system has more than one SCSI, try moving termination to another point in the chain.

(4) - Check for:

a. Bent pins on chips

b. Mis-seated boards

c. Loose motherboard chips

d. Damaged motherboard

c. See Section (10)

(5) - KickStart 1.2 ————— Yes--> Update Kickstart to 1.3 or higher ----> (*)

No

See Section (2)

(6) - Autoboot Jumper J4 on? ————— No---> Put it on and try again.

Yes

J3 Open?

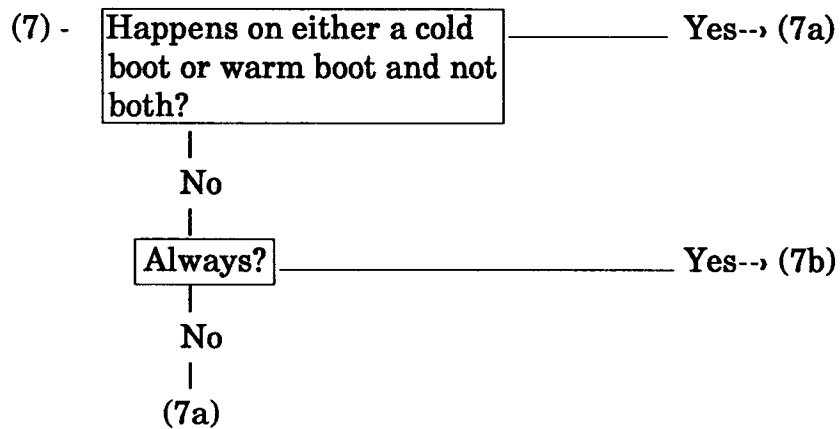
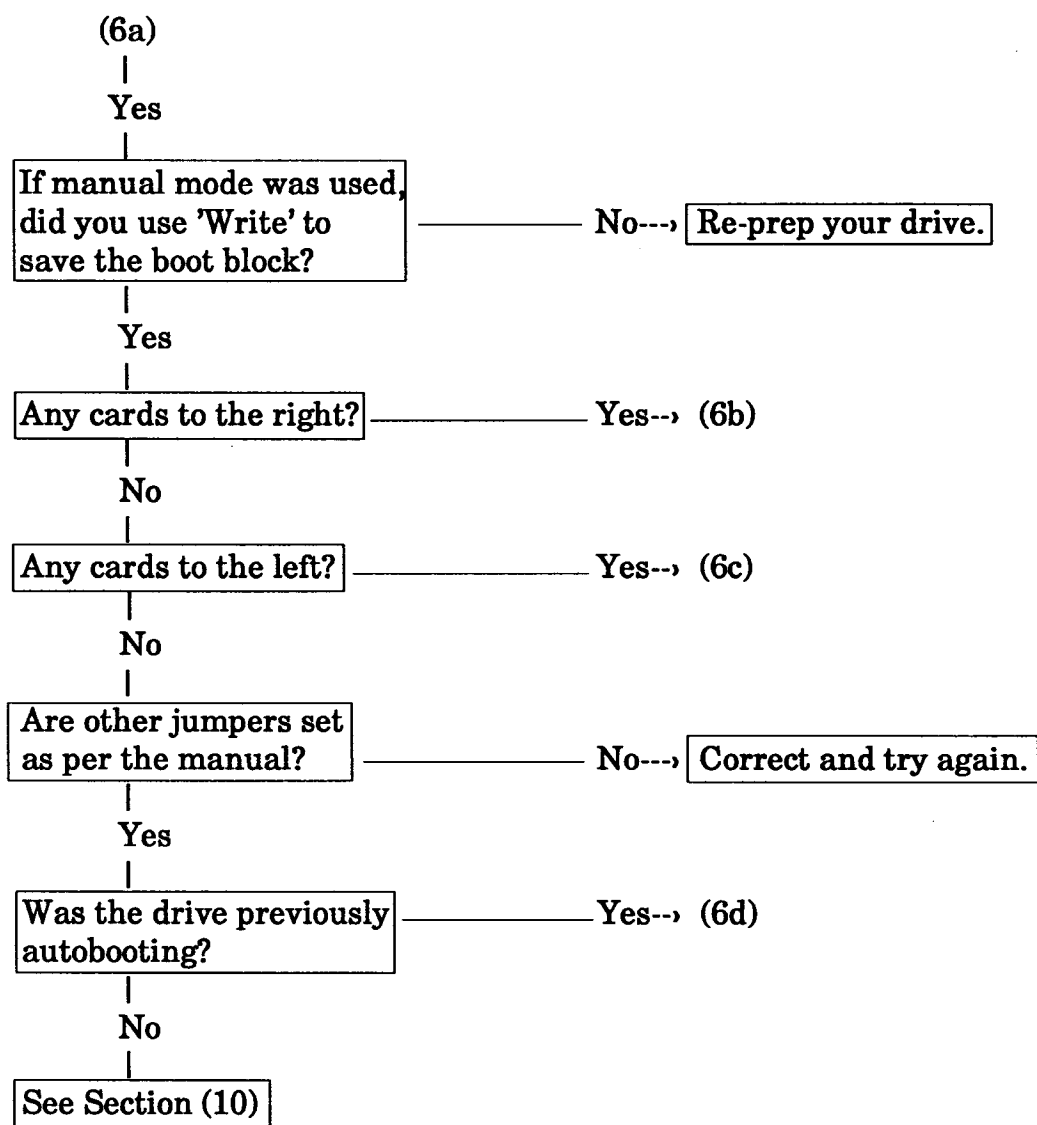
No---> Setting not supported, remove jumper.

Yes

Has drive been prepped?

No---> See your manual for the instructions on how to prep your hard disk.

(6a. Next Page)



(8) - Run the memory test.

Bad RAM?

Yes-->

Replace it. If you have more than 2 SIMMs, swap them around to find the bad SIMM.

No

Reference Sections 16a , 16b , 16c

(9) - Have you edited the startup-sequence?

Yes-->

See Section (16a) only.

No

Any other boards?

Yes-->

Remove one and try again.

No

New Software package was installed?

Yes-->

You may need to re-install WorkBench. You may want to contact the software company before you begin again for help with installing their software.

No

Was hardware added?

Yes-->

You may have accidentally disconnected a cable or mis-seated a board.

No

9a

(10) - The following information section is provided as a reference ONLY. You should consult your dealer or GVP Technical Support before accepting these options as your only remaining options:

Is your motherboard of Rev. 4.3 or lower?

Yes-->

If your board has J15, short it. If it is not successful, See (10a).

No

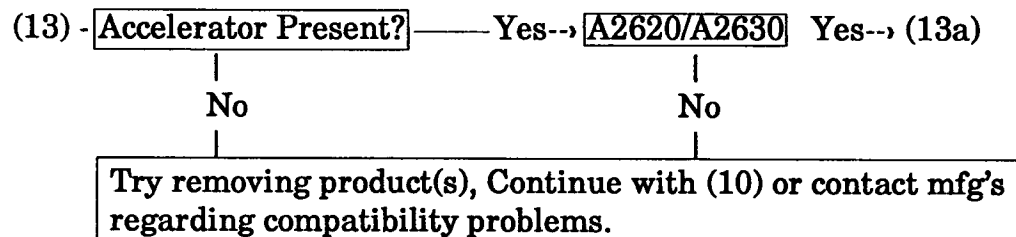
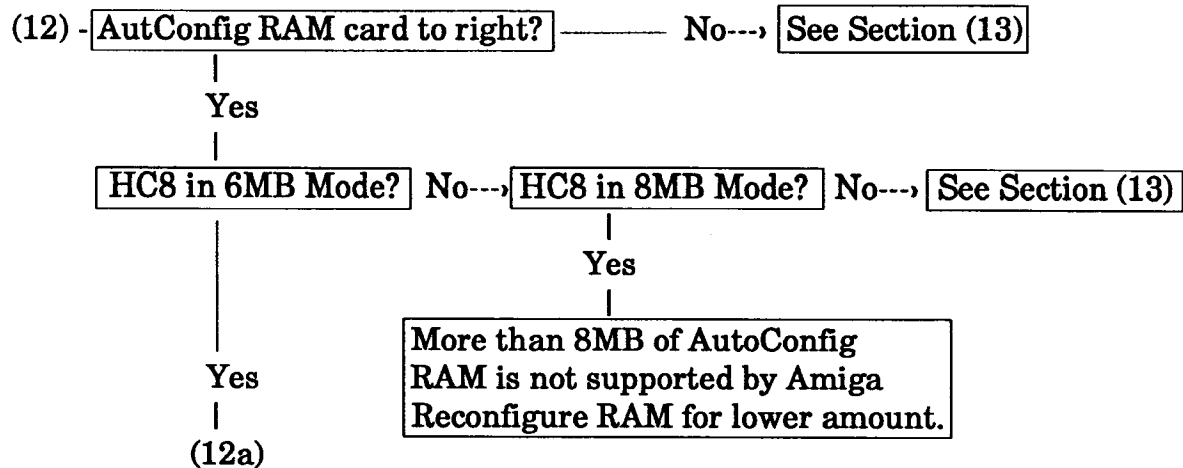
Is your motherboard revision below Rev 6.2?

Yes-->

See (10b)

No

You may have a bad board. Contact your dealer or GVP Technical Support.



- (3f) - Drive may not have a boot block, incorrect termination may prevent proper SCSI communication, a bad cable may prevent proper communication and may make affect termination, and an incorrectly functioning motherboard may also be a factor - See (10)
- (3g) - Some drives may not handle SCSI reselection properly. Use FastPrep to turn off the DC/RC flag in the boot block. Use manual mode. Some drives may not react properly to the polling of SCSI LUNs. Use FastPrep to turn on the Last LUN flag in the boot block.
- (3h) - SCSI termination packs should be at the two furthest points on the SCSI bus. If both internal and external ports are in use, you should terminate the point that is the furthest run from the disk controller if the controller does not have removable terminators. The other devices on the bus should usually not be terminated.
- (3i) - If your card does not have a v4.5 AutoBoot ROM, it is needed. Contact your dealer or GVP Technical Support. If you do have the ROM, be sure that J2 is on position 2/3. On a three-pin jumper, the pin 1 position is marked by a point made out of the white diagram that boxes the jumper.

- (6b) - If you have an accelerator that has RAM mapped at a high address location, you need the v3.12 or higher GVP SCSI driver ROM. Correct this if needed. Next, try removing cards or proceed to (10). Get dealer help or GVP Technical Support.
- (6c) - Remove and try again.
- (6d) - Use the FastPrep utility to examine your booting drive. If the drive is not seen, or it reports 0MB, you may have a bad hard disk. Contact your dealer or GVP Technical Support.
- (7a) - Use Fastprep manual mode to set all partitions on each drive you never intend to boot from to '128' and use the 'Write' button to save the changes. Remember to click in the window of each partition and do not use the 'Return' key to move the cursor around.
- (7b) - You need copy Workbench to the drive.
 - For 1.3 - (7c)
 - For 2.0 - (7d)
- (7c) - Insert a workbench disk in DF0: at the '1,' prompt and type the following line: `df0:c/copy DF0: SYS: all` and when it finishes, remove the disk and reboot. All should be correct. If not, go to (7a).
- (9a) - Contact your dealer or user-group. You may have moved a utility via it's icon and the startup-sequence, or other script file it calls is unable to find the utility. This may be the cause of the system not booting all the way. Go to Section (16a) only.
- (10a)- Try board in Rev 4.5 or 6.2 (or later) motherboard. Also refer to Technical Service Bulletin 25 from Commodore for upgrading your motherboard to Rev 4.5. This bulletin came out during the second quarter (Apr/May/Jun) of 1989.
- (10b)- Contact your dealer regarding the documented motherboard expansion problems in the Rev 6 and Rev 6.1 Motherboards. It may be possible have the motherboard updated to 6.2 for only a minor fee under a special policy that Commodore has for this situation.
- (12a)- The HC8 does not support an AutoConfig RAM board to the right while it is in the 6MB configuration. You must remove the board or set the HC8 to a lower RAM setting.

- (13a)- A2620/30 boards must have the -03 or higher boot ROMs on them in order to be compatible with many expansion products. Contact your Commodore dealer regarding an upgrade to these ROMs
- (16a)- Determine which instruction in the startup-sequence causes the system to stop. Adding 'Echo " number, "' to several points in the startup may help pinpoint the problem. A stock startup-sequence from the Commodore Workbench disk should in most cases work. Try re-installing the software or commenting-out the problem command with a semicolon to be sure.
- (16b)- Try re-seating your cards, also make sure motherboard socketed chips are fully seated, and all other cards (if any) are properly configured as per their manual(s).
- (16c)- Try removing some equipment or try it in another system. Also contact your dealer and/or GVP Technical Support and/or the company who makes other equipment in your system. Keep notes of what you do, to help reduce your time on the phone.

If it worked in another Amiga system, See Section (10)

If it did not, you may have a bad card. Contact your dealer or GVP Technical Support.

Useful Troubleshooting Notes

A. Early Motherboard

Some early B2000 motherboards lack a pullup resistor on the 68000's DTACK line. The Commodore Service Center Technical Update Bulletin contains this pullup as part of the Rev 4.x to Rev 4.5 field upgrade (Item #7). The revision I HC8 PCB now has the pullup built in. The symptoms vary from system crashes under heavy DMA/CPU load, to no boot and black/gray screen with RAM and/or Autoboot enabled. This problem can affect Series II cards even with other cards in the expansion backplane. Most cases appear to be 4.1, 4.2, and 4.3. If the Technical Bulletin 25 can not be located, or the Series II card does not have the pullup implemented via a jumper (Including RAM-8), here is the actual modification to the Amiga motherboard:

To the right side (facing the front of the 2000) of the 68000 chip on the motherboard is the silkscreen label for the processor, U100. Immediately forward and to the right of this label are solder pass-throughs called VIA's. Add a 470 ohm resistor between the 2 VIA's.

GVP is not responsible for damage done while modifying motherboards. Motherboards can be returned to Commodore for updates if necessary.

Cards with removable disk drive power tap headers could cause serious damage to a drive if the connector is put on backwards. Care should be taken when connecting the wire to the header.

Some unmodified Hydra ANET cards have an AutoConfig problem. If a Series II controller is placed as the next AutoConfig card AFTER the ANet card, it may not configure the Series II. Current fix is to place ANet after the Series 2, or place another card that can deal with the ANET card AutoConfig problems. A 2MB RAM card and Bridgeboards work well in most cases. The ANet card has a confirmed bug in AutoConfig, as of Nov. 90. Hydra Systems has a PAL to correct the problem. Contact them for details.

REV 2 HC8 FIRST RUN BOARDS: R3 had an incorrect resistor value. The correct color code for the resistor is: Brn,Grn,Brn. A handful of boards were modified in house with resistors that have the code: Red,Red,Brn. These boards will exhibit random RAM errors with memory test utilities.

The system may not come up if either of the 1st two RAM SIMMs is defective or mis-inserted and any RAM enabled. This is also true for the 4MB SIMM configuration on later PCBs. If bad RAM is suspected, check to see if SIMMs are inserted properly first.

Crashing/Noise problems may be rectified by moving the J13 jumper to position 2/3 on Rev 2 HC8 PCB's. Some cards may have been incorrectly set on early units.

At board #850, the DPRC surface mount chip PCB pad was fixed to fit the chip better. At board #1350, The change to Rev 4 occurred, where the U8 RAM address buffer was added. Also, J14 is added to allow two 4Meg SIMMs to be put in CN16 and CN17 to get 8MB of onboard RAM. See also the HC8 jumper chart.

This card seems to dislike some of the 68000 socket based accelerator hacks (CMI, CSA M.Racer, etc). Common problems are 'Unexpected status' requestors at autoboot time. Also the Ronin/Hurricane non-asynchronous boards are extremely sensitive to it. The CSA 68030 MMR and ICD Adspeed seem to have the best track record.

The Rev 6 motherboard has a documented expansion bus problem and will cause expansion boards to be unstable in the expansion bus. The motherboard must be updated by Commodore to 6.2. Rev 6.1 may also display similar expansion bus problems.

The board seems to like some A500 and A1000 card cages. GVP does not officially support these configurations. There are, however, some universally accepted tips for expansion on A1000 and if a user intends to try using this card in a card cage. This includes the use of better power supplies (A500 and A1000), Grounded and faster PALs (A1000), Terminated expansion bus lines (A500 and A1000), and avoiding the use of Pass-Throughs .

Use of this card in an A3000 backplane is not currently recommended due to a bug involving Zorro II DMA and the A3000 expansion bus.

B. Software

See ROM Revisions for gvpscsi.device update.

Early FaaastPrep disks will automatically load in the device driver if the ROM is not already enabled. Later disks do not. If you are attempting to clear a corrupted boot block from a drive, make sure that it is disabled so you can reach WorkBench to get access to a shell. Otherwise, the disk may hang during startup for reasons that may be difficult to determine at first.

FaaastPrep has been changed and split into ExpertPrep 2.0 (Manual Mode) and FastPrep 2.0 (Automatic Mode). It is extremely dangerous to rewrite or update bootblocks with the new software if it was previously written with the earlier v1.x FastPrep software. If prepping is necessary, HAVE BACKUPS! Data integrity can not be guaranteed. THIS IS YOUR WARNING!

Series II Compatibility With Other Accelerator Products

The GVP Series II products have a very good record with properly designed accelerator products. There are, however, sometimes a few settings or configurations needed to have your system run at it's most optimal. Here is a list of products we have encountered and their overall record:

CMI and similar 68000/double clock speed hacks
CSA and TTR 68020 boards
Ronin/Hurricane/Imtronics Accelerators

- As a group, they have marginal compatibility. These units may work in some systems, but not others. Reasons vary, but most are due to noisy or flawed 68000 glue-logic that is required of all accelerators. Some may draw too much power from A500 PSUs.

AdSpeed and CSA 68030 MMR

- Best 2 as far as the 68000 socket plug-in accelerators go. AdSpeed can not detect Series II DMA transfers when they are done in the on-board RAM ranges. GVPscsiCtrl and v3.12 driver (or higher) are needed to work around this conflict. The versions with disk interfaces may not co-exist well with Series II because they attempt to wedge into the AutoConfig signals. Nothing can be done to the Series II controllers to help this.
- The MMR needs the v3.12 driver if and RAM is used on the MMR. With this setup and driver, Masks may be set to 0xFFFFFFFFE.

FusionForty/RCS Management - Limited history.

- Compatibility report vary. Many software changes and updated encountered. Not recommended as a stable accelerator platform for this reason.

PP&S 68040 Products

- Recommend using under AmigaDOS 2.0 and with latest software. This includes SetPatch and 68040.library. This is due to a KNOWN DMA/Copyback Cache conflict in AmigaDOS 2.04/2.05. Also use v3.12 or higher and Mask of 0xFFFFFFFFE to handle high mapped RAM ranges properly and efficiently.

Commodore A2620/30

- Very good compatibility. Note that AmigaDOS 2.0 will merge RAM from the accelerator and 16-bit RAM cards. This may produce poor performance due to Kickstart remapping being placed in 16-bit RAM instead of 32-bit RAM. This can also happen with other accelerators, including GVP models.

GVP 68030

- Excellent compatibility. Be aware that GVP Combo and G-Force boards will have active driver ROMs on them. These ROMs WILL override the onboard ROM of the Series II. Be sure that all jumpers are set properly for the ROM version in the accelerator. Obtain newer or equal ROMs for Series II boards if 68000 mode is to be used other than for floppy based games. Unless other ROMs are equal in jumper settings, Series II (Autoboot) ROMs should be disabled. See also A2620/30 for AmigaDOS 2.0 RAM merge situations.

GVP 68040

- Excellent compatibility. See also GVP 68030 for ROM override of downstream cards.

Note that the HC8, when set for 6MB RAM, can not have a 2MB RAM card AutoConfigured in front of it. This is because the setting is only intended for use around an Amiga Bridgecard.

Section 3

Series II A2000 SCSI Products

Extra Notes:

Section 4

Series II A500 SCSI Products

The following products are covered in this section:

A500 Series II DMA SCSI/RAM Hard Disk Sub-System
A530 Turbo 68EC030, 32 bit RAM, & Series II SCSI Hard Disk
Sub-System

The following information is provided on these products:

A Compatibility Note
Power Supply Change

This section is not completed and additions will follow.

A500+8 Series II SCSI controller fix for Revision 3 motherboards

It has been found that certain GVP Series II A500 hard drive controllers do not work properly with revision 3 A500 motherboards. This revision was a very early design that did not pass American FCC approval, and therefor was only sold in Europe, Canada, and Australia. There was a problem with the expansion bus in this revision that was unforeseen when it was designed. To compensate for this problem, it may be necessary to remove the EMI filter that is connected to a critical clock line in the revision 3 Amiga 500. This EMI filter is designated EMI402.

Several important items to note:

- 1) This has been found to work on about 80% of the rev. 3 motherboards that we encountered. If a qualified technician is not available, do not attempt the modification.
- 2) This procedure will nullify the use of genlocks on the 23-pin video connector. However, genlock use can be restored by connecting a jumper wire between the 1st and 3rd solder points of the EMI402 pad.
- 3) GVP cannot be held responsible for damage to the Amiga or any other peripheral by performing this modification.

Power Supply Note

GVP Impact A500 Series II Power Supplies are capable of running under both the North American 110/120v 60hz and the European/Austrailian 220/240v 50hz standards. All that is required is that the proper computer power cord is connected between the wall outlet and the power supply brick.

Some distribution regions have reciently experienced a greater than average fallout rate of power supplies which use 220/240 voltage. The cause of this fallout has been difficult to determine, as the PSU used with the A500 Series II has not changed since the release. In the interest of quality, GVP has since switched to a different manufacturer of power supplies. These units have been phased into production during the summer of 1992 with positive results. Defective power supplies seemed to fail withing days or weeks of the initial use, so there is no extnesion of warranty periods for these units. The standard GVP warrranty still applies.

Section 4

Series II A500 SCSI Products

Extra Notes:

Section 5

A3001/A3050 68030 Accelerators

The following products are covered in this section:

A2000-030/XXX/XXMhz 68030 Accelerator & AT Main PCB
A2000-030/RAM8 - Nibble Mode 32-bit RAM card
A2000-030/RAM32 - Page Mode 32-bit RAM card

Including the following combination packages:

A2501 16Mhz 68030/RAM Accelerator & AT Disk Interface
A3001 25/28Mhz 68030/RAM Accelerator & AT Disk Interface
A3033 33Mhz 68030/RAM Accelerator & AT Disk Interface
A3050 50Mhz 68030/RAM Accelerator & AT Disk Interface

The following information is provided on this product:

Jumper Defaults
RAM Settings
PCB Histories
PAL Lists
AT Drive Tips

PCB Histories for A3001 Series Accelerators

A2000-030

- Rev 4 - Original release.
- Rev 7 - Changes for RAM32 memory card. Additional ROM options.
- Rev 8 - Additional address option (never implemented).

A2000-030-RAM8

- Rev 3 - 16/25/28/33Mhz uses 1Mb x 8 Nibble-Mode RAM
50Mhz uses 1Mb X 8 Page Mode RAM (limited production)

A2000-030-RAM32

- Rev 3 - 28/33/50Mhz uses SIMM32-1MB or -4MB, depending on application.

Jumper Defaults for A2000-030 Accelerators

A2000-030 Rev 4

Jmpr	Defaults	Desc
	16-28Mhz/33Mhz	
J4	- Open	- FPU Not Connected to U2 - Pair w/J5
J5	- Short	- CPU & FPU Use Oscillator U1 - Pair w/J4
J6	- Open	- 68030 Cache Enabled
J7	- Open	- 68030 MMU Hardware Enabled
J8	- Open	- U24/U25 Option (With J9 Enabled)
J9	- Short	- U24/U25 Disabled - Boot Strap ROM Control
J10	- Short	- Reserved - A2000 BSW Motherboard Option
J11	- Open	- 68030 Mode - Short to Toggle to 68000 Mode
J12	- Open	- Reserved - A2000 BSW Clock Option
J13	- Open	- Reserved - A2000 BSW Clock Option
J14	- Short	- Reserved - A2000 BSW Clock Option
J15	- Open	- Reserved
J16	- Short	- Reserved

A2000-030 Rev 7

Jmpr	Defaults	Desc
	16-28&33/50Mhz	
J1	- Short/Short	- DELAY TAP 1
J2	- Open /Open	- DELAY TAP 2
J4	- Open /Open	- CONNECT 882 OSC/ - U2
J5	- Short/Short	- CONNECT 030 OSC TO 882 - U1
J6	- Open /Short	- Cache - Short=Enable, Open=Off, Programmable
J7	- Open /Open	- MMU Enabled
J8	- ---> / --->	- Connect Indicator LED for Disk Activity
J9	- Short/Short	- Disabled - U24/U25 Boot Strap ROM
J10	- Short/Short	- Reserved - A2000 BSW Motherboard Option
J11	- Open /Open	- 68030 Mode - Short to Toggle to 68000 Mode
J12	- Open /Open	- Reserved - A2000 BSW Clock Option
J13	- Open /Open	- Reserved - A2000 BSW Clock Option
J14	- Short/Short	- Reserved - A2000 BSW Clock Option
J15	- Short/Short	- Reserved - ROM Control
J16	- Short/Short	- Reserved
J17	- Short/Short	- Read 27C265 ROM High Code
J18	- Short/Short	- AT Interface Driver Code Disabled

A2000-030 Rev 8

Jmpr	Defaults 28&33/50Mhz	Desc
J1	- Short/Short	- DELAY TAP 1
J2	- Open /Open	- DELAY TAP 2
J4	- Open /Open	- CONNECT 882 OSC/ - U2
J5	- Short/Short	- CONNECT 030 OSC TO 882 - U1
J6	- Open /Short	- Cache - Short=Enable, Open=Off, Programmable
J7	- Open /Open	- MMU Enabled
J8	- ----> /---->	- Conect LED Indicator for Disk Activity
J9	- Short/Short	- Disabled - U24/U25 Boot Strap ROM
J10	- Short/Short	- Reserved - A2000 BSW Motherboard Option
J11	- Open /Open	- 68030 Mode - Short to Toggle to 68000 Mode
J12	- Open /Open	- Reserved - A2000 BSW Clock Option
J13	- Open /Open	- Reserved - A2000 BSW Clock Option
J14	- Short/Short	- Reserved - A2000 BSW Clock Option
J15	- Short/Short	- Reserved - ROM Control
J16	- Short/Short	- Reserved
J17	- Short/Short	- Read 27C265 ROM High Code
J18	- Short/Short	- AT Interface Driver Code Disabled
J19	- 2&3 /2&3	- Reserved

A2000-030 RAM8 Rev 3

Jmpr	Defaults 28Mhz/33Mhz	Desc
J1	- Open /Short	- Reserved
J2	- Open /Short	- Reserved
J3	- Short/Short	- Reserved
J4	- Short/Short	- Reserved
J5	- Short/Short	- 4MB RAM Closed - 8MB Open
J6	- Short/Short	- Reserved
J7	- Open /Open	- Reserved

A2000-RAM32 Rev 3

Jmpr	Defaults	Desc
------	----------	------

28&33/50Mhz

J1	- Short/Short	- Reserved - Refresh Rate
J2	- Open /Open	- Reserved - Refresh Rate
J3	- Short/Open	- Reserved - Refresh Rate
J4	- Short/Short	- Reserved - Refresh Rate
J5	- Short/Short	- Default RAM Option
J6	- Short/Short	- Reserved
J7	- Open /Open	- Reserved
J8	- Short/Short	- Reserved - Refresh Enable
J11	- Open /Open	- Reserved - Refresh Rate
CN11	- 2/3 /Open	- Reserved - Clock
CN12	- 1&2 /1&2	- Reserved - Clock -***
CN13	- Open /Short	- Reserved - Clock -***

RAM Settings Chart for A3001 32-bit RAM Cards

RAM8 Rev 3 25/28/33/50Mhz

Memory(1)	J5
4	- Short
8	- Open

RAM32 Rev 3 28/33Mhz

Memory(2)	
2	- Auto Detect
4	- Auto Detect
8	- Auto Detect

RAM32 Rev 3 50Mhz/20MB

Memory(3)	J5
4 AutoCfg	- Either
8 AutoCfg	- Short
4 AutoCfg + 4-16 Extended	- Open

RAM32 Rev 3 50Mhz/32MB

Memory(4)	J5
4 AutoCfg + 4-28 Extended	- Short
4-32 Extended	- Open

Notes:

- (1) - Uses 4 or 8 1Mb X 8 80ns Nibble Mode DRAM SIMMs with population starting from the bottom. 33Mhz uses 70ns speed.
- (2) - Uses 2, 4 or 8 GVP SIMM32-1MB/60ns modules with population starting from the top.
- (3) - Uses four (4) GVP SIMM32-1MB/60ns modules in the top bank and in the lower bank, either four (4) GVP SIMM32-1MB/60ns modules for AutoCfg mode or from 1 to 4 GVP SIMM32-4MB/60ns modules for Extended mode
- (4) - Uses ONLY GVP SIMM32-4MB/60ns modules in all sockets.

Subject: Performance of Quantum AT Drives the GVP A3001/68030 boards.

The performance of the Quantum "AT" drives (Prodrive 40AT and 80AT) with the built-in hard disk controller on the GVP IMPACT 68030 board (and A3001 upgrade kits) has been very disappointing. After extensive investigation and analysis of this problem, we have finally solved it and we are pleased to report a major performance increase on all new shipments of the "AT" drives and the 68030 AUTOBOOT EPROM kits.

When used with the 25Mhz 68030 board and 32-bit wide RAM daughterboard we can now report a performance level of over 706KB/sec reported by the public domain "diskperf2" program (as used in the Amiga World hard drive comparison reviews). In some cases this is literally DOUBLE the previous performance which was reported with the same configuration. Of significant importance is also the fact that even when reading very short 512 byte blocks, performance has more than doubled and the data transfer rates on writes are now over 500KB/sec. According to our tests results (as well as when comparing to the Amiga World article results) it would now appear that this makes this combination the fastest hard disk solution currently available on the A2000.

To achieve this incredible performance, a new Quantum firmware ROM revision is required as well as the new V2.0 68030 AUTOBOOT EPROM kit from GVP. The new Quantum firmware revision is known as V6.8. Note however that not all Quantum AT drives can be upgraded to this new firmware revision level. Only drives which currently have firmware level 6.0 can be upgraded. The older drives (generally with V5.9 or older ROMs) cannot be upgraded to achieve this speed increase. The reason for this is that this new V6.8 firmware requires the presence of the Adaptec AIC-560 BL or BC chip (Rizzo 3). The older drives used the Adaptec AIC-560AL (Rizzo 2) chip. Note also that with this new Adaptec chip, V6.8 firmware ROM and the new V2.0 GVP 68030 AUTOBOOT EPROM kit, two "AT" drives can now be daisy-chained off the same 40-pin ribbon cable directly connected to the 68030 hard disk controller interface connector. With the earlier Adaptec chip and firmware levels, only a single drive could be connected at one time.

For those of you who have had complaints on performance from your customers, we would like to give a brief explanation below of what the problem turned out to be. The main performance problem was found to be in the Quantum AT firmware ROM. The reason for this was that this drive was originally designed to be used under MS-DOS in any IBM PC AT environment. As MS-DOS generally does not issue single read or writes for data blocks greater than 1024 bytes, no major performance problems were really encountered when compared to other drives on the market. Quantum was however aware of the problem and were very co-operative in providing us with various beta copies of new and improved firmware revisions as these become available. At the same time we improved our own driver software (contained in the GVP 68030 AUTOBOOT EPROMs) and the combination of these two improvements turned out to be

a winner! One of the main improvements to our own driver is that it will now automatically load itself in 32-bit wide fast RAM WITHOUT ANY HELP from SETCPU or having to run "FastMemFirst". Even when AUTOBOOTing directly from the EPROM based driver (as opposed to loading the driver with the "binddrivers" command), the driver will automatically copy itself into the FAST 32-bit wide DRAM if this is present. By guaranteeing that the driver will always run out of 32-bit wide DRAM (when it is present), a significant performance gain was achieved.

In addition to this driver change we experimented with the various Quantum DISCACHE options and parameters and found that the default parameters used by Quantum did NOT provide optimal performance in the AmigaDOS environment. After much experimentation we determined the optimal DISCACHE parameters as we have modified the GVP "atPREP" program to automatically set these new DISCACHE parameters when a new drive is prepped with our software. This significantly improved performance when reading shorter blocks under diskperf2 (this alone improves the read transfer rate of 512 byte blocks by almost 50% under diskperf2).

The new V2.0 68030 AUTOBOOT EPROMs and Quantum V6.8 firmware upgrade kit will be available from GVP as of October 16, 1989. Note that it is important to ascertain that the Quantum drive to be upgraded is the current revision level as mentioned above. The new V2.0 68030 AUTOBOOT EPROM PLUS V6.8 Quantum firmware ROM upgrade kit will be available for \$45 to all registered users. Shipping charges are not included.

A3001 AT Interface and Drive Notes:

When troubleshooting a complex board like the 68030, and the AT interface is involved, remove as many variables as possible. Here is a list of tips that be used to isolate a problem:

Removal of the RAM daughtercard may be necessary to remove the possibility of bad RAM causing the problems.

Load the software version of the device driver (i.e. with binddrivers) to remove the possibility of a faulty Boot ROM.

Always try swapping AT cables.

Mixing firmware versions 5.9/6.0/6.6/6.8 on Quantum 40AT/80AT drives can cause problems.

When mixing 6.8 or 7.0 firmware version, follow 7.0 jumper settings.

Drives with 5.9 MUST have the Adaptec ACI-560BL or CL chip U206 in order to be updated to firmware revisions higher than 6.0. The AL chip cannot support the Master/Slave 2 drive setting.

We have encountered some instances where 40mb and 80mb drives have been mis-labeled.

Corrupted bootblocks can cause GURU's at bootup. To remove this, Disable the ROM, boot from the installation disk but do not allow it to boot (^D for 1.3, or use the 2.0 Boot Menu). At the CLI, open another shell or CLI and type 'binddrivers'. Even if you get a SW error requester, use the other shell CD to 030scripts or gvputils (depending on age of the diskette) and call the prep utility with the options 'UNPREP UNDOS' after the unit number. The prep utility has a template if needed, and is called either 'GVPPrepAT' or just 'GVPPrep'. When this is done, the boot block should be clear. Power down, re-enable the boot ROM and begin again.

Some versions of the FastPrep disks also provide an unprep utility that doesn't require a device driver. This is called 'GVPPUNPREPAT'. Use the steps above, but do not load the device driver with 'binddrivers'.

Some power supplies may put out RF levels that may corrupt data on the AT data cable. Problems usually only seen on double drive systems with long AT cables. A Fix is to route the cable along the side or under PS instead of over the top where the holes are. Another (drastic) solution is to use a shielded cable, or wrap the data cable in foil and then something non-conductive (tape) and then ground the foil to the case. This is the worst case known. It is not a very common problem.

An 030 board once gave gray screens and 1970 gurus continuously, and occasionally it was willing to boot. The problem turned out to be a bad AT interface on the Accelerator.

On the Rev 7 and Rev 8 PCBs, the U29 PAL should be of AMD manufacture and a checksum of U29/5FEA. If interface/disk errors are suspected during large bursts of data, check the part type. An incorrect PAL checksum will cause problems with AT AutoBoot ROMs recognizing the interface.

Quantum 40AT/80AT Hard Drive Notes

Firmware:

- 5.9 - Supports 1 drive. Physical drive upgradable to 6.0 only.
- 6.0 - Supports 1 drive. Firmware can be updated to 6.8 (or higher) to support 2 drives if Adaptec chip on PCB is AIC-560BL or CL.
- 6.6 - Not too common. Upgradable to v6.8 (or higher) firmware.
- 6.8 - 2 drive support. Jumper settings for our boards:
 - drive 1 - Master - DS shorted, SS open
 - drive 2 - Slave - DS & SS Removed
- 7.0 - Updated 6.8 - Minor changes for better compatibility with other AT drive mechanisms.

Maxtor Hard Drive Notes

Model LXT200A (3.5", Half Height) is known compatible.

Model 7213A (3.5", Low Profile) is known compatible.

Models LXT340A and LXT535A are known as incompatible (see Other Drive Compatibility, Cirrus Logic chip).

Model LXT213A has been both compatible and incompatible (see Other Drive Compatibility). This drive has had a 'Cirrus Logic' chip with both the '265' and a '260' sequence on it. The model with a '260' sequence is compatible with the A3001/A3050 interfaces.

Other Drive Compatibility Information

At the time of writing, all Quantum drives after the 40AT/80AT series are known to be incompatible. Through testing, it was noticed that these drives have a chip on the AT interface labeled 'Cirrus Logic' that has a code below the name that includes a '265' sequence. This chip has also been found on several Maxtor, Conner, and Fujitsu models that have proven to be incompatible. If a drive has a chip of this nature, it is likely to be incompatible. If any situation occurs where this is no longer true, please inform GVP Technical Support.

Section 5

A3001/A3050 68030 Accelerators

Extra Notes:

Section 6

Combo22/33 68030 Accelerator Products

The following products are covered in this section:

Combo22 - 68030/68882/22Mhz SCSI/RAM Accelerator
Combo33 - 68030/68882/33Mhz SCSI/RAM Accelerator

Jumper defaults are provided for all revisions of these products.

Combo 22/33 Jumper Defaults

Jmpr	Jumper Defaults		Desc
	22Mhz/33Mhz Revision 3	22Mhz 33Mhz Revision 4	
J3	- Open /Open	- Open /Open	- MMU Enabled (Short=Disable)
J4	- Short/Short	- Short/Short	- SCSI Ignored. Open Enable
J6	- Open /Open	- Open /Open	- MMU Enabled (Short=Disable)
J7	- Short/Short	- Short/Short	- Reserved - 68030 cache control
J8	- Open /Open	- Open /Open	- Reserved - EPROM code offset
J9	- Short/Short	- Short/Short	- Onboard ROM Enabled (Open=Disable)
J10	- Open /Open	- Open /Open	- See RAM Configuration table
J11	- Open /Open	- Open /Open	- Reserved
J12	- Short/Short	- Short/Short	- Reserved
J13	- Short/Short	- Short/Short	- See RAM Configuration table
J14	- Open /Short	- Open /Short	- Reserved - Refresh
J15	- Short/Short	- N/A	- Reserved - Refresh
J16	- Open /Short	- Open /Short	- Reserved - Refresh
J17	- Short/Short	- N/A	- Reserved - Refresh
J18	- Short/Short	- N/A	- Reserved - Refresh
J19	- Short/Short	- Short/Short	- Reserved - Refresh
J20	- Open /Short	- Open /Short	- Reserved
J21	- 1&2 /1&2	- N/A	- Reserved
J22	- Short/Short	- N/A	- Reserved
CN7	- 1&2 /1&2	- 1&2 /1&2	- Reserved
CN8	- 1&2 /1&2	- 1&2 /1&2	- Reserved
-->	- CN6	- LED	- Disk Activity Indicator Connector

Note: '>' end of white jumper outline marks pin 1.

Section 7

G-Force 68030 Accelerators

The following products are covered in this section:

G-Force 68EC030/68882 25/40Mhz SCSI/RAM Accelerators
G-Force 68030/68882 50Mhz SCSI/RAM Accelerator

The following information is provided for these products:

An introduction
Jumper defaults
Minor Updates and information

G-Force 68030 Accelerator Products

The G-Force Accelerator products are very similar to the ComboXX series of Accelerators. Although not exactly the same, many features are quite similar. The G-Force adds a Kickstart remap capability, therefore not requiring an MMU, and reducing the cost of the product. It is also possible to use an MMU based 68030 in this board, use the Kickstart remap utility, AND use an MMU utility like Enforcer, getting the performance of the Kickstart remap, and the debug capabilities of Enforcer.

It has, in the past, been popular with a small group of users who like to 'over-clock' the main CPU on the board to whatever speed they can get. This can lead to damaged parts on the board and an unreliable system. The G-Force accelerators, at each clockspeed, have their RAM controller timings set for maximum performance at the speed that they are built at. This means that only a small margin is made in the RAM design for the natural differences between semiconductor parts. Overclocking these boards will certainly cause problems, and is not sanctioned by GVP.

Jumper Defaults for the G-Force 68030 Products.

Jmpr	Defaults	Desc

J2	- Short	- Default 68030 mode - Open for 68000 mode
J3	- Open	- MMU ctrl line enabled - Short to disable
J7	- Open	- Reserved
J8	- Open	- Read ROM code Low - Short to read high
J9	- Short	- ROM enabled, Open to disable ROM (1)
J10	- Open	- Reserved
J11	- Open	- Reserved
J13	- Open	- Reserved
J14	- Short	- SCSI interface disabled - Open to enable
J15	- Open	- Reserved
LED	- (2)	- SCSI activity indicator
CN7	- 1/2	- Reserved - RAM control
CN14	- 2/3	- Reserved - SCSI clock option
CN15	- 1/2	- Reserved - SCSI clock option
CN16	- 2/3	- FPU Clock option - Default main clock osc.

Note:

- (1) - Remove only if it is necessary to load driver from another source. i.e - to erase a corrupted boot block. If the ROM is not active, Extended RAM will not be seen; the 68030 cache will remain hardware-disabled, and the disk interface is not activated because the driver is not loaded from the ROM.
- (2) - Connect the Hard Disk LED cable to this header.

Clockspeed Specific Jumper List

Jmpr	Defaults	Desc

25Mhz		

J4	- Short	- Reserved - RAM control
J5	- Short	- Reserved - RAM control
J6	- Open	- Reserved - RAM control
J12	- Short	- 1MB/4MB AutoConfig - Open for Extended
CN8	- 2/3	- Reserved - RAM control
40Mhz		

J4	- Short	- Reserved - RAM control
J5	- Open	- Reserved - RAM control
J6	- Short	- Reserved - RAM control
J12	- Short	- 4MB/8MB AutoConfig - Open for all Extended
CN8	- 2/3	- Reserved - RAM control

50Mhz

J4	- Short	- Reserved - RAM control
J5	- Short	- Reserved - RAM control
J6	- Short	- Reserved - RAM control
J12	- Short	- 4MB/8MB AutoConfig - Open for all Extended
CN8	- 1/2	- Reserved - RAM control

Update Notes for G-Force 68030 Accelerators

The original HD mount bracket will cause damage to traces on this PCB. If plastic strip protection is not already installed, this bracket should be replaced. The new HD mount bracket released during the 3rd quarter of 1992 is for use on all GVP G-Force and Combo accelerator products. The old brackets may still be used on Combo22/33 models of GVP accelerators. Boards with trace damage should be returned to GVP for repair.

If an early release board appears unstable, check PAL U37. This part, except in certain cases, should not be a TI (Texas Instruments) chip. This part should be replaced if the second Alpha-numeric sequence after the word 'Malaysia' ends in an 'XF'.

Starting in November 1992, production boards now have removable terminators for the SCSI bus. They are located under the internal 50-pin SCSI cable. This means that the following termination diagram (which is the proper method of termination) can and should be used whenever possible:

TD---D---D---D---D---D---D---DT

T= Terminator block. D= A SCSI Device (this includes the controller).

This assumes a full SCSI bus. With fewer drives, remove 'D's from the center until only 2 remain. Typically, 2 device systems (host controller and 1 SCSI unit) usually do not need 2 sets of terminators on the SCSI bus as long as a short (<1ft/30.5cm) cable is used.

The SCSI terminators on these boards use 10-pin 220-ohm pullup/330-ohm pulldown resistor packs. When the packs must be re-installed, Pin 1 (marked by a dot on the resistor pack) is matched to the square through-hole on the PCB. Look on the solder side of the PCB to find the square shaped pin.

The maximum SCSI cable length is 8ft (244cm). As SCSI device performance increases, it is critical that good quality cable and proper termination is observed for proper and reliable operation to occur.

All boards that come with 68EC030 parts can be updated with MMU based 68030 parts of the same speed rating. It should be noted, however, that GVP can not be responsible for damage to the PCB for improperly removed or installed 68030 chips. GVP may, under certain circumstances, require that the original 68xxx processor parts be re-installed before warranty service is attempted.

Section 7

G-Force 68030 Accelerators

Extra Notes:

Section 8

G-Force 68040/A2000 Accelerator Products

The following product is covered in this section:

A2000-68040/33Mhz Accelerator plus SCSI/RAM/Serial/Parallel

The following information is provided for this product:

- Jumper defaults
- PCB history
- Minor Updates and Information

G-Force A2000 68040 Jumper Defaults (6/1/92)

Jmpr	Defaults	Desc
	Rev 4/Rev 5	
J1	- Open /None	- Reserved - DUART Option
J2	- Open /Open	- Reserved - Driver Option
J3	- Open /Open	- Reserved - Driver Option
J4	- Short/Short	- Disk Interface Disable (Open=Enable)
J5	- Short/Short	- ROM Enable (Open=Disable)
J7	- Open /Open	- MMU Enable (Short=Disable)
J8	- Open /Open	- 68040 Control
J9	- Open /Open	- 68040 Control
J10	- Short/Short	- Reserved - Bus Control
J11	- Open /None	- Reserved - Refresh Control
J12	- Open /None	- Reserved - Refresh Control
J13	- Open /None	- Reserved - Refresh Control
J14	- Open /None	- Reserved - Refresh Control
J15	- Open /Open	- Cache Off, Programable On (Short=Disable)
J16	- Short/Short	- 68040 Mode (Open=68000)
J17	- Open /Open	- Reserved - ROM Option
J18	- Open /Open	- Reserved - ROM Option
J19	- Open /Open	- Reserved
J20	- Short/Short	- RAM Size
J21	- Short/Short	- Reserved - Clock Option
J22	- Short/Short	- Burst Disable (Open=Enable)
J23	- NA /None	- Reserved
J24	- Short/Short	- Read ROM Code Low (Open=High)
J25	- +12 FAN CN	- FAN CONNECTION ONLY!
J26	- Open /Open	- DTACK Pullup Disable (Short=Enable)
J27	- Short/Short	- Reserved - Clock Option
CN6	- XXX /XXX	- SCSI Disk Activity Connector
CN9	- 2-3 /2-3	- Std Parallel Port (1/2=Amiga Parallel)
CN11	- 2-3 /2-3	- Reserved - DPRC Clock Option (7M/14M)
CN12	- 1-2 /1-2	- Reserved - SCSI Chip Clock Option
CN17	- 2-3 /2-3	- Reserved - Address Control (3Tr)
CN18	- 2-3 /2-3	- Reserved - Address Control (2Tr)
CN19	- Open /Open	- Reserved - RAM Clock Option
CN20	- 1-2 /1-2	- Reserved - DPRC Clock Option (DT)

PCB Histories for the A2000-68040 Accelerator

A2000-040

- Rev 4 - Original release, Australia only.
- Rev 5 - First FCC (USA) Revision. Some units may have removable SCSI terminator packs.
- Rev 6 - New layout incorporates cost reductions related to FCC. Removable SCSI resistor packs are now the more standard 8-pin type, which are found on many current hard disk drives.

Update Notes for G-Force 68040 Accelerators

Starting in October 1992, production boards now have removable terminators for the SCSI bus. They are located under the SIMM sockets at the top of the board. This means that the following termination diagram (which is the proper method of termination) can and should be used whenever possible:

TD---D---D---D---D---D---D---DT

T= Terminator block. D= A SCSI Device (this includes the controller).

This assumes a full SCSI bus. With fewer drives, remove 'D's from the center until only 2 remain. Typically, 2 device systems (host controller and 1 SCSI unit) usually do not need 2 sets of terminators on the SCSI bus as long as a short (<1ft/30.5cm) cable is used.

The SCSI terminators on revision 5 boards use 10-pin 220-ohm pullup/330-ohm pulldown resistor packs. Revision 6 boards use 8-pin versions which are more popular among drive companies. When the packs must be re-installed, Pin 1 (marked by a dot on the resistor pack) is matched to the square through-hole on the PCB. Look on the solder side of the PCB to find the square shaped pin. These packs are located above the RAM SIMM sockets.

The maximum SCSI cable length is 8ft (244cm). As SCSI device performance increases, it is critical that good quality cable and proper termination is observed for proper and reliable operation to occur.

Section 8

G-Force 68040/A2000 Accelerator Products

Extra Notes:

Section 9

G-Force 68040/A3000 Products

The following product is covered in this section:

A3000-68040/28Mhz RAM/Accelerator

The following information is provided for this product:

- A features overview
- PCB modification note
- A jumper chart (defaults only)

GVP G-FORCE 040 Board
68040 Accelerator for the A3000 and A3000T

The GVP G-Force 040 Board is a high performance 68040 CPU accelerator for the Amiga 3000 and the A3000T.

Features

1. 68040 CPU running at 28Mhz. Includes MMU, FPU and separate 4K byte data and instruction caches providing an incredible 22MIPS (million instructions per second).
2. 3.75 MFLOPS Double Precision Floating-Point Performance
3. Up to 8MB of on board VERY HIGH SPEED 40ns, 32-bit wide, non-multiplexed, DRAM allowing very high speed RAM access by the 68040 CPU. Access to this DRAM is an order of magnitude faster than accessing memory on the A3000 motherboard.
4. High-speed, 40ns, on board DRAM can be configured from 2MB standard up to 8MB though easy-to-install custom SIMM modules, allowing an A3000 with up to 24MB of RAM to be configured for high-end workstation applications.
5. The V2.0 Kickstart ROM (on the A3000's Motherboard) can be copied and transparently mapped into the high-speed, 40ns on-board DRAM, resulting in an even greater performance advantage. (Think of it as caching the entire, frequently accessed AmigaDOS operating system code.
6. The memory design fully supports and take advantage of the 68040 CPU's burst memory access, further pushing performance to unequalled limits when populated with 4MB or 8MB of 40ns RAM.
7. Software switchable fallback mode to the A3000's native 68030 CPU for full backward compatibility.
8. Requires Commodore's final V2.0 Kickstart ROM and Workbench for 68040 CPU operations. The 68040 mode is fully compatible with all software which runs under the V2.0

G-Force A3000 68040 Jumper Defaults (1/31/92)

Jmpr	Defaults Rev 5	Desc
J1	- Open	- MMU Enabled
J2	- Short	- Cache Ctrl (Short=Disabled and programmable, Open=Enable)
J3	- Open	- Reserved - Clock Option with J4
J4	- Short	- Reserved - Clock Option with J3
J5	- Open	- Reserved - A3000 Clock Option
J6	- Short	- Reserved - RAM Control
J7	- Open	- Reserved - RAM Control
J9	- Open	- Reserved - RAM Clock
J10	- Short	- Burst RAM Access Disabled
J12	- Open	- Reserved
J13	- Short	- Reserved - RAM Refresh
J14	- Short	- Reserved - RAM Refresh
J15	- Short	- Reserved - RAM Refresh
J16	- Short	- Reserved - RAM Refresh
J18	- Short	- Reserved - RAM Refresh Enabled
J19	- Open	- Reserved - 68040 Control
J20	- Short	- Reserved - 68040 Control
J21	- Open	- Reserved - 68040 Control
J22	- Open	- Reserved - 68040 Clock Control
J23	- Open	- 68040 Mode - (Short=68030 Mode)
J24	- Open	- Reserved - RAM/ROM Control
J25	- Open	- Reserved - RAM/ROM Control
J26	- Open	- RAM Cfg
J27	- Short	- RAM Cfg
J28	- Open	- RAM Cfg
J29	- Open	- RAM Cfg
J30	- Short	- RAM Cfg
J31	- Open	- RAM Cfg
J32	- Open	- RAM Cfg
J33	- Short	- RAM Cfg
CN3	- 2&3	- Reserved - Clock Option
CN4	- 2&3	- Reserved - DMA Option
CN5	- Open	- Reserved

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G-Force 68040/A3000 PCB Modification

May 1992

The G-Force040 accelerator for the A3000 was designed for maximum performance and processing power. This design leaves little room for noisy motherboards with unstable timing signals. These conditions may make the G-Force040 appear unstable in some Amiga 3000s.

The symptoms of this problem are:

- Failure to switch into Asynchronous mode (the machine freezes or crashes when this is attempted.)
- Failure to boot after a warm reset (screen stays black).
- Failure to boot when cold started (the machine crashes the first time GVPCpuCtrl is executed, either to remap Kickstart or switch into Asynchronous mode.)

There is a modification that can be done to the board that will make the G-Force040 run well in all Amiga 3000s. The modification does require, however, that the board be run in Asynchronous mode all the time, and returning to Synchronous mode is no longer possible. This is actually an advantage, since requiring the G-Force040 to slow down to the motherboard clock rate in synchronous mode reduces the performance of the board.

The following modifications should be performed to all G-Force040 boards returned by customers complaining of stability problems, especially when the machine is rebooted or cold-started.

NOTE: The modification should only be attempted by a qualified technician. GVP will not cover boards modified by dealers that are damaged while applying this modification. If the board is still in warranty, GVP will apply the modifications for no charge. The only cost incurred is the shipping of the board to GVP.

Remove PAL U7 from it's socket to perform the modification.

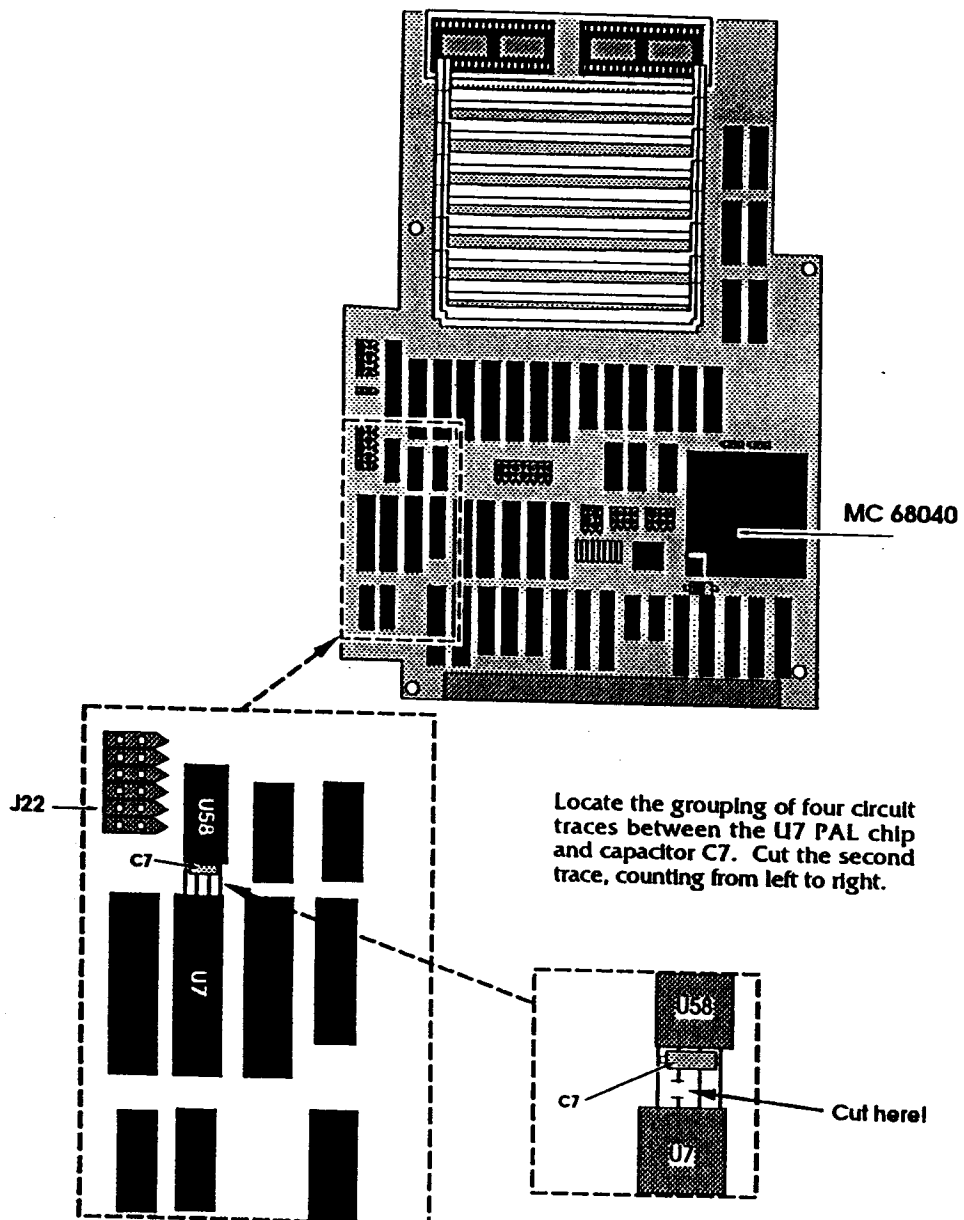
Cut the tract between the U7 PAL and the C7 capacitor on the component (top) side of the G-Force040 board (see drawing).

Replace the U7 PAL in it's socket, taking care to align the notch in the chip with the notch in the silk-screening (white lines) surrounding the socket.

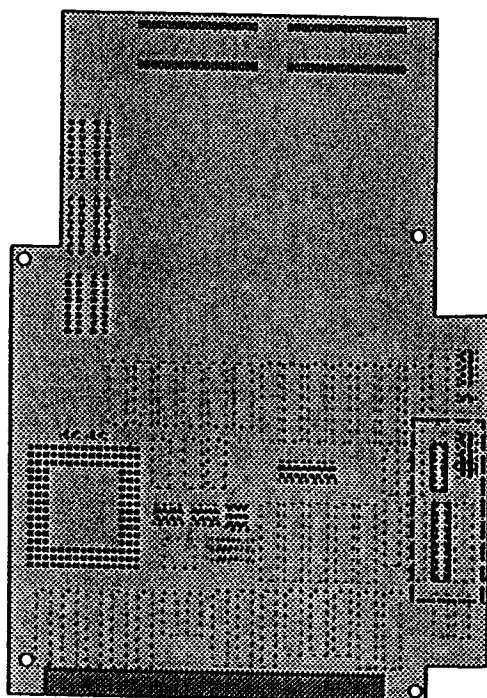
Add a 4.7k (1/4 or 1/8 watt) resistor to pins 10 and 14 of U58 on the solder (bottom) side of the G-Force040 board (see drawing).

Change jumper J22 from open to CLOSED as the default position.

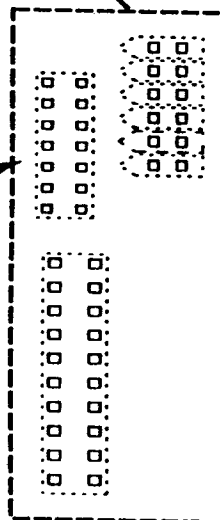
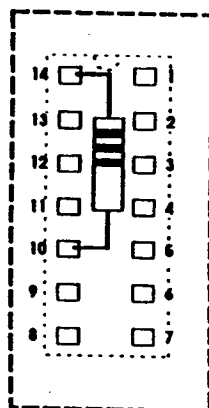
COMPONENT
(TOP)
SIDE



**SOLDER
(BOTTOM)
SIDE**



On the solder (bottom) side of the board, connect a 4.7k resistor between pins 10 and 14 of the U58 chip.



Section 9

G-Force 68040/A3000 Products

Extra Notes:

Section 10

Impact Vision 24 Video Products

The following products are covered in this section:

- Impact Vision 24
- VIU-S RGB Splitter
- VIU-CT RGB Component Transcoder

A troubleshooting flowchart is provided for these products.

IV24 Flow Charts

For Installation problems

Page 2

For Video problems

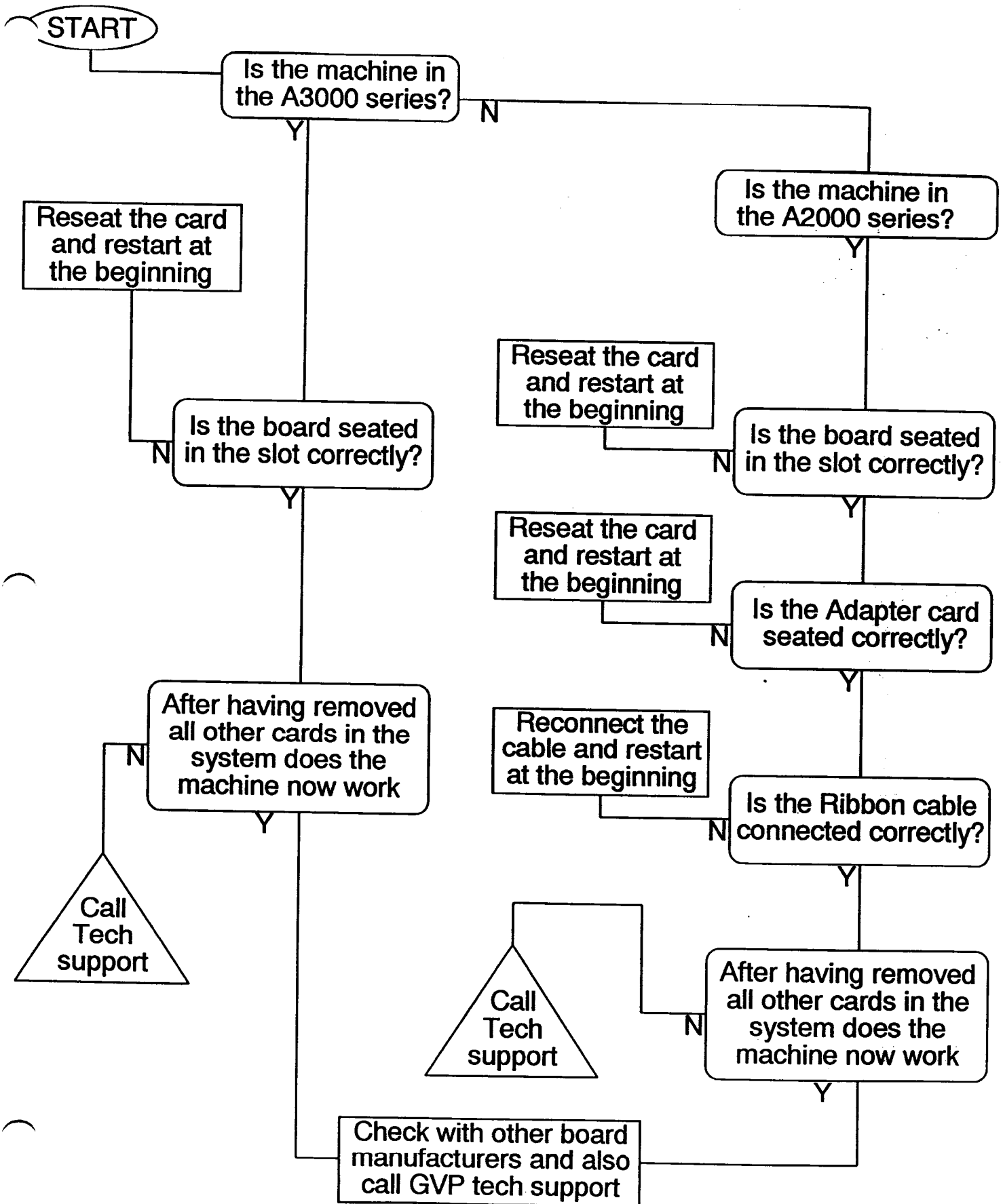
Page 6

For Software problems

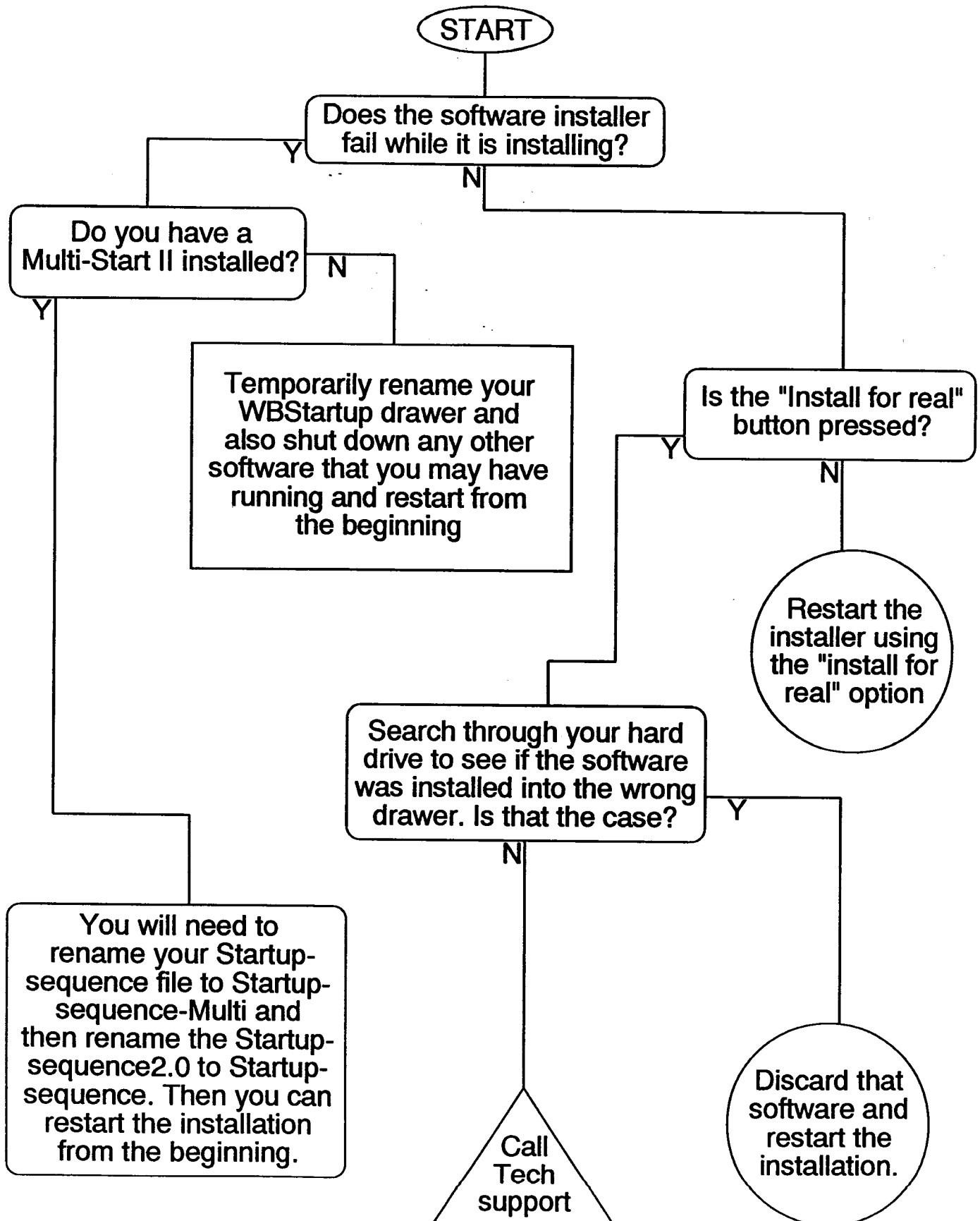
Page 10

If you encounter problems that are not covered by this flow chart please fill out the IV-24 Problem Solving Sheet and bring it to the IV-24 Technical Specialist so that it can be included in a newer version.

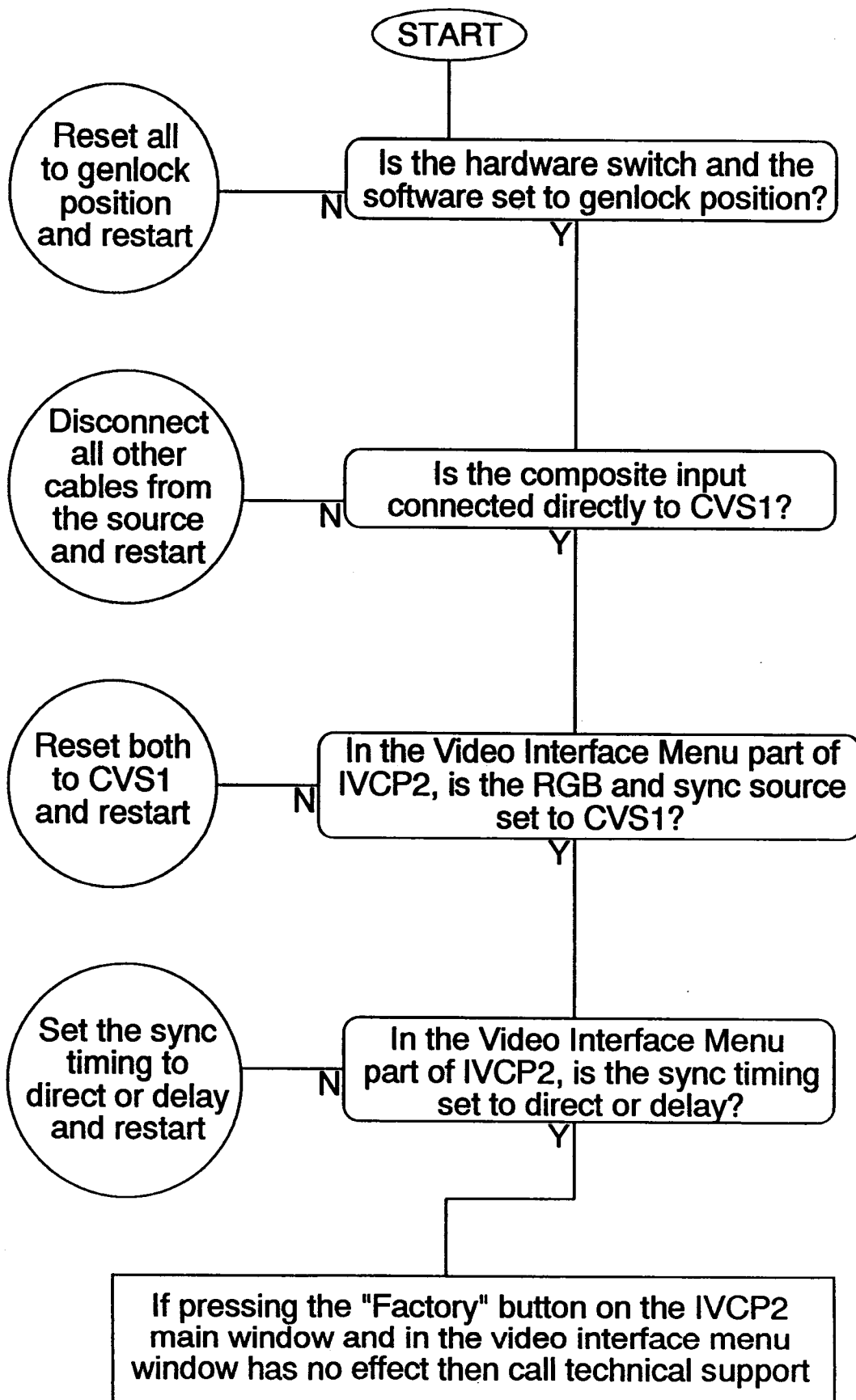
1) The machine fails to boot



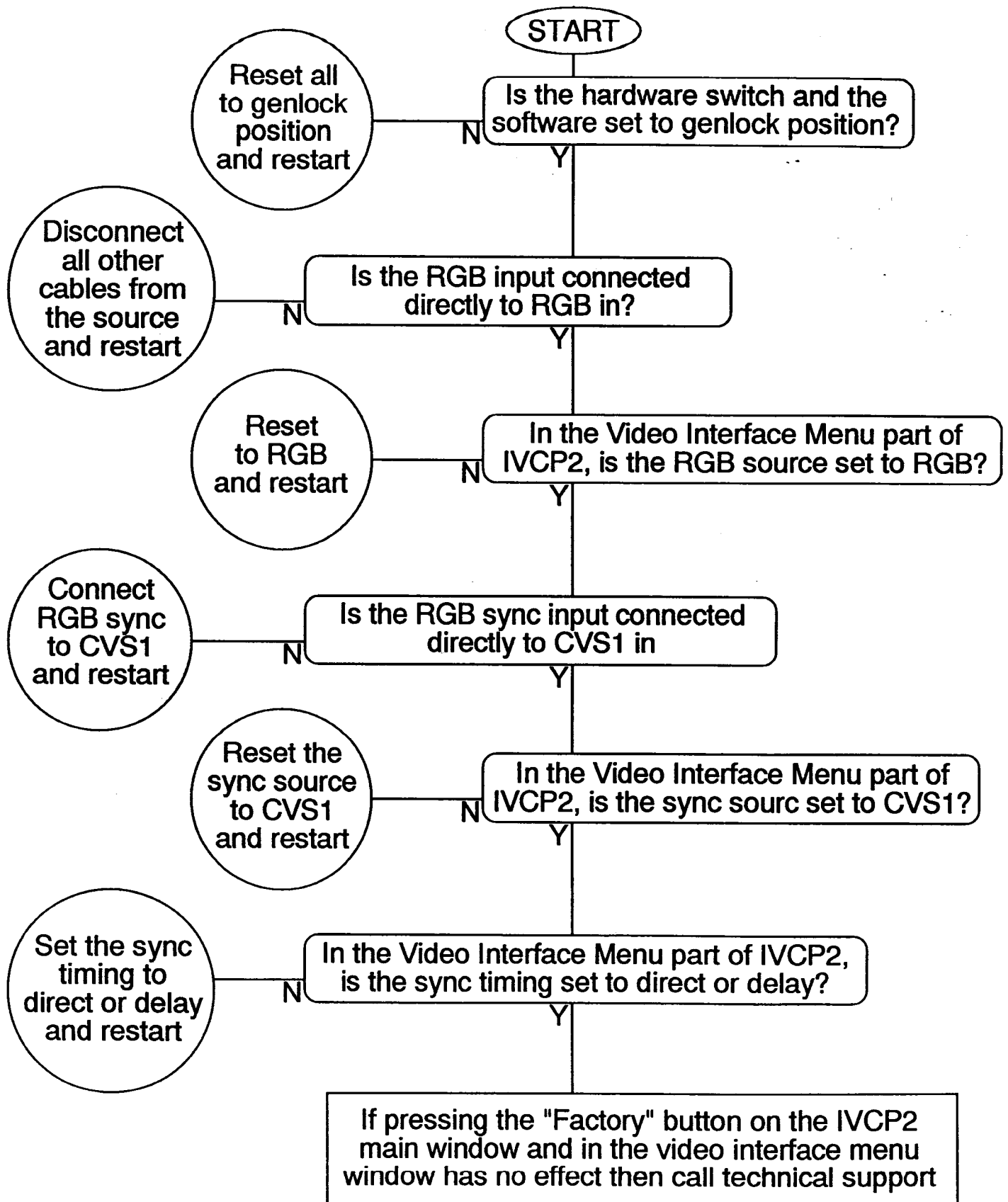
3) The software install has problems



4) For problems with the composite input



6) For problems with the RGB input



7) IV24 Utility Software

11) If IVCP2 fails to operate at all Page 12

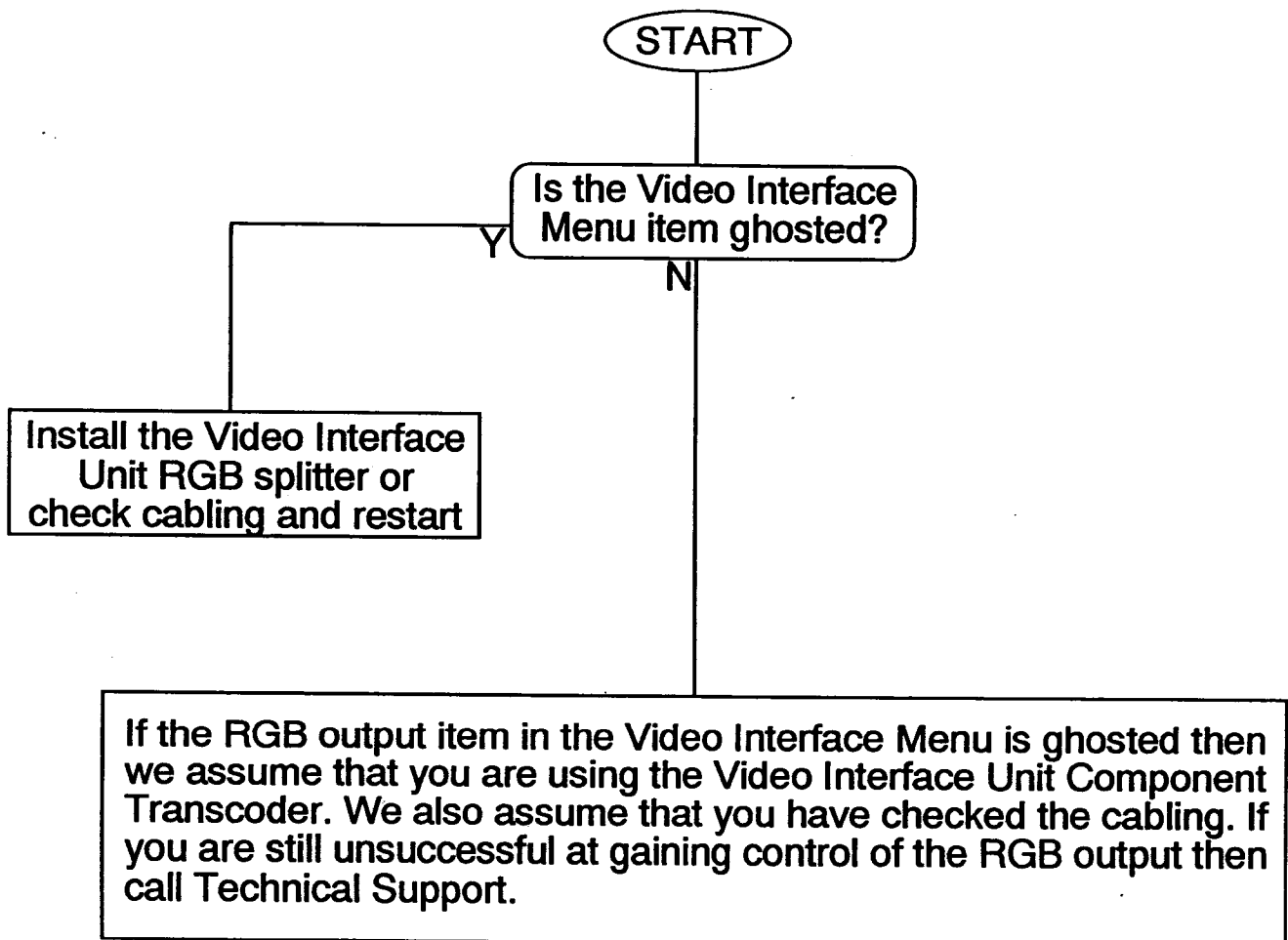
12) If IVCP2 has areas ghosted Page 13

13) For problems with IVPip Page 14

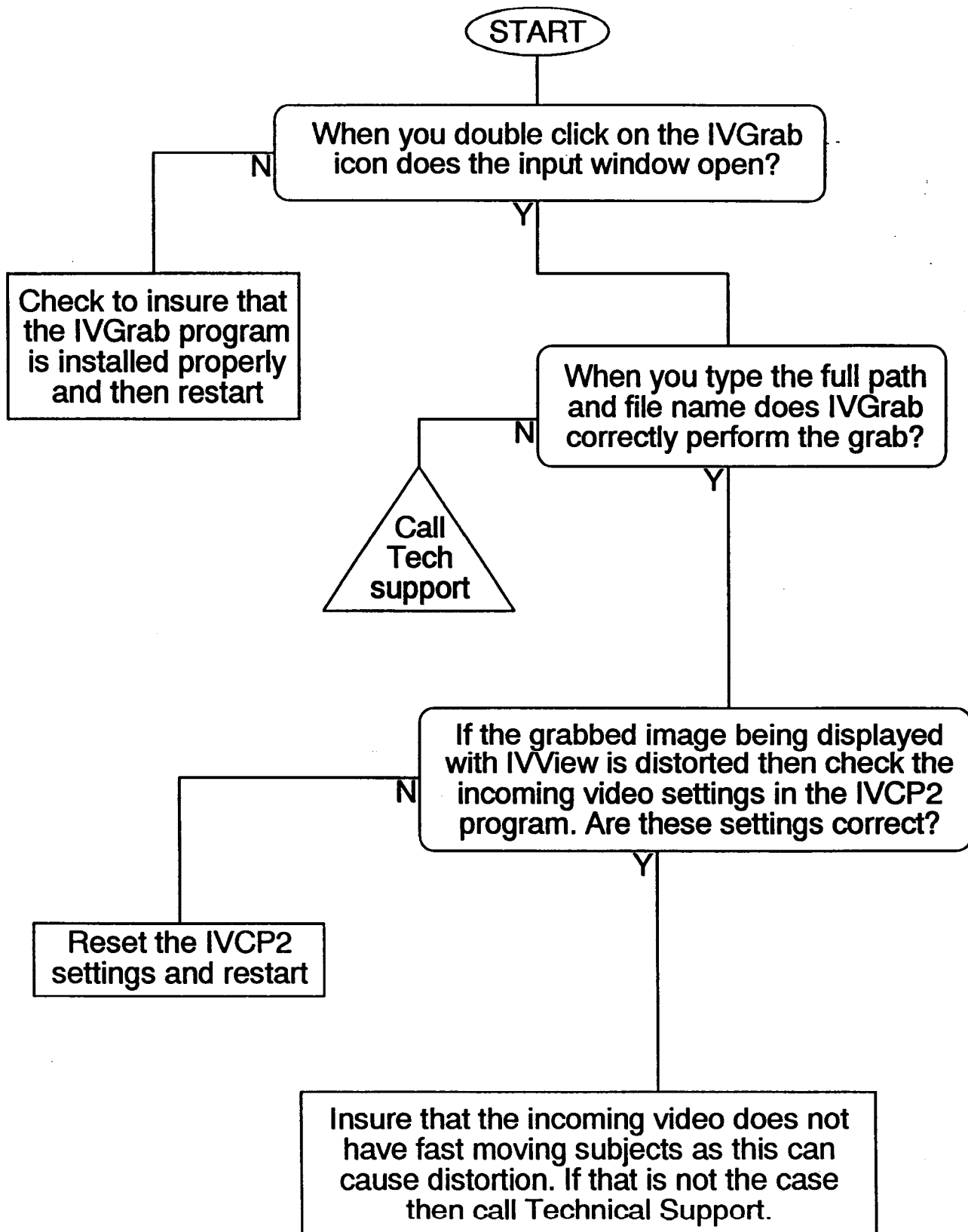
14) For problems with IVGrab Page 15

15) For problems with IVView Page 16

12) If IVCP2 has areas ghosted



14) For problems with IVGrab



8) For problems with MacroPaint IV24

If you are having problems with MacroPaint
IV24 then please call Technical Support

10) For problems with Scala IV24

If you are having problems with Scala
IV24 then please call Technical Support

Section 11
PhonePAK/Voice Mail System

The following products are covered in this section:

PhonePAK/VFX

An Update History is provided.

PhonePak VFX Update Information

Release 1.0 Software - September 1992

- Original release.

Release 1.01 Software - November 1992

- Corrects problems with some FAX machines.
- Other minor and cosmetic bugfixes.
- Update available on Support BBS

No PCB updates or jumper changes have occurred.

Section 11

PhonePAK/Voice Mail System

Extra Notes:

Section 12

G-Lock Genlock Products

The following products are covered in this section:

G-LOCK (PAL/NTSC/SECAM)

This section to be completed at a later date.

Section 13

GVP PC Emulator Products

The following products are covered in this section:

GVP A500 PC/286 80286 PC Emulator Card
ATOnce Plus 80286 PC Emulator Module

A troubleshooting flowchart is provided for these products.

Section 14

Miscellaneous Audio/Midi & I/O Products

The following products are covered in this section:

- I/O Extender
- MIDI Rack Mount Option
- DSS-8

The Folloing information is provided:

- I/O Extender Software Notes
- DSS Software Updates
- DSS Troubleshooting Flowchart

I/O Extender Software Notes

The original Preferences utility for I/O Extender may not save the individual port settings correctly. Therefore, it may be necessary to manually alter the default settings for each of the I/O Extender ports. Individual port settings will have a port number (0, 1, 2, etc...) after the tooltype identifier. Make or modify the following entries directly into the GVPIO ToolType via the WorkBench Information utility (A menu item on Workbench).

The following example is for Port 0. DTERATE and RXBUFFER can be any of the values that appear in the GVP Serial Preferences program. FLOWCONTROL entries can be either RTSCTS, XONXOFF, or a null string after the '=' sign. The 'NONE' entry is not valid.

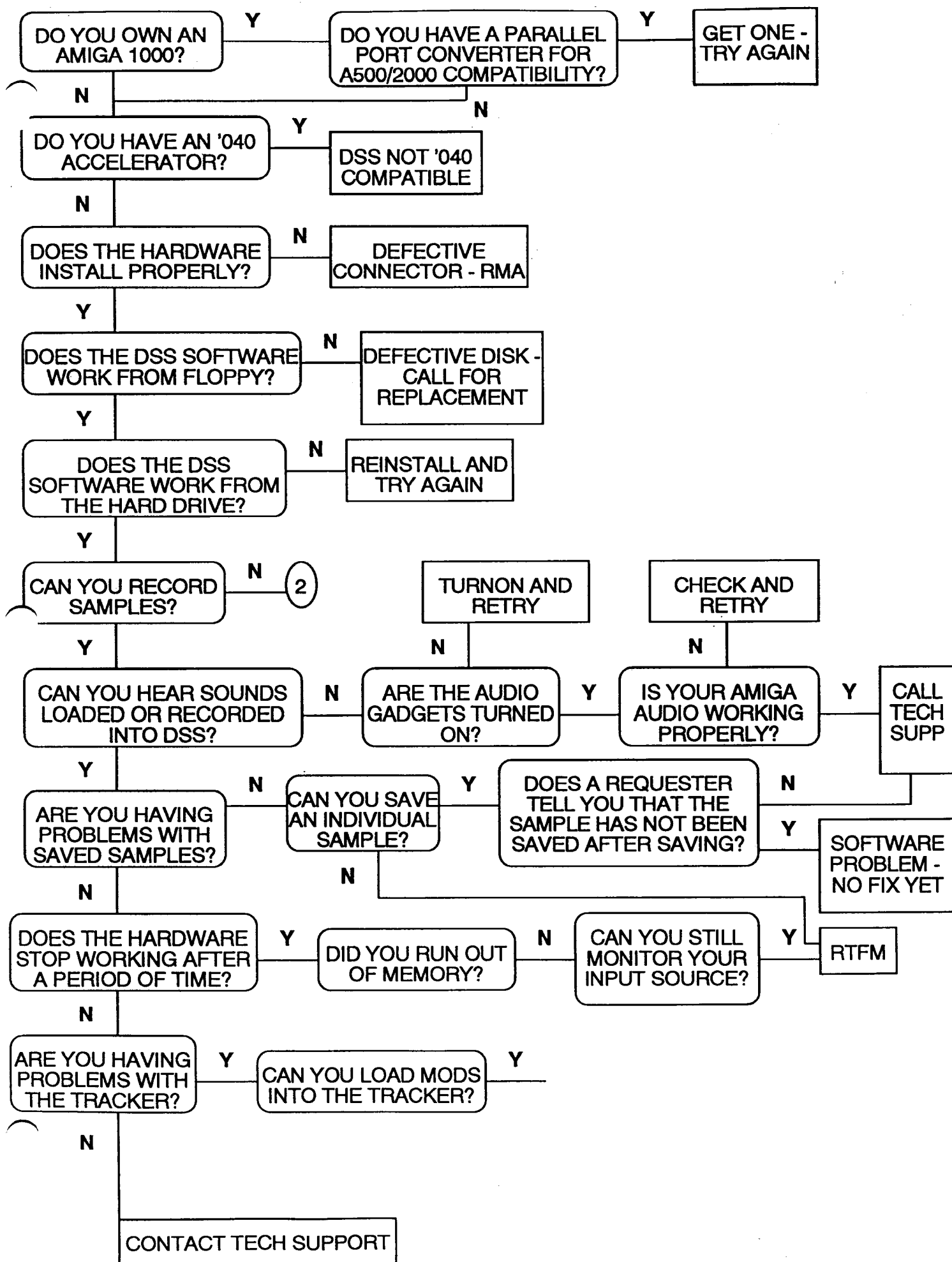
```
DTERATE0=19200  
FLOWCONTROL0=RTSCTS  
RXBUFFER0=65536
```

Changes to the Tooltypes will take effect upon next reboot. Remember that software that directly accesses the device driver, like terminal software and packages that use serial ports for control of external devices, will generally override the defaults. See the manual with your software package for their preferred defaults if necessary.

As of December 1992, both an updated Preferences utility and an updated driver (GVPIO 1.7) have been released. The Preferences utility now operates properly and the driver update affects only the serial ports.

DSS Software Updates

- v1.0 - First release.
- v1.10 - Free update, minor bugfixes, subtle interface changes.
- v1.15 - First release for the digitizer that has the digital volume controls.
- v1.16 - Minor buxfixes, including a lockup that could have occurred when digitizing at maximum rates to create long (multi-minute) samples.



2

DO YOU HAVE AN
AUDIO SOURCE
PLUGGED INTO DSS?

N

PLUG
ONE IN

Y

ARE YOUR
VOLUME LEVELS
SET PROPERLY?

N

SET AND
RETRY

Y

DID YOU SELECT THE
PROPER SIDE TO
MONITOR YOUR INPUT?

N

Y

DO YOU SEE ANY
INPUT WHEN
MONITORING?

Y

DO YOU HEAR STATIC
WHEN MONITORING?

Y

IS THE DSS HARDWARE
PLUGGED DIRECTLY INTO
THE PARALLEL PORT?

Y

ARE ANY WIRES
CROSSING THE INPUT
SOURCE CABLE?

N

IS YOUR MONITOR CLOSE
TO OR UNSHIELDED FROM
THE DSS HARDWARE?

N

DO YOU HAVE ANY
ADDITIONAL PERIPHERALS
IN YOUR AMIGA?

Section 14

Miscellaneous Audio/Midi & I/O Products

Extra Notes:

Section 15

GVP Firmware Revision History

The following revisions are covered in this section:

- v1.0 scsidev.device SCSI Driver
- v1.0 atdev.device AT Driver
- v2.x scsidev.device SCSI Driver
- v2.x gvpat.device AT Driver
- v2.x IV24 Control Code
- v3.x gvpscsi.device SCSI Driver and ComboXX Support
- v3.x gvpat.device AT Driver and Accelerator Support
- v3.x IV24 and Splitter Control Code
- v4.x gvpscsi.device SCSI Driver and G-Force Support

The SCSI and AT revision information is provided. Impact Vision ROM history will be added in the future.

GVP ROM Revision History

SCSI Code

- 1.0 - Original Impact cards. Basic SCSI driver. No problems.
- Beta1 - Some removable-media support and Bernouli support.
- Beta2 - First true removable-media support. Some Bernouli drives.
- 2.2 - Official removable-media supported version. May not like some Bernouli units.
- 2.31 - v2.2 plus Tape support. ROM code will not run in HC2, 8/x and A500-4MB Impact I units due to size of code.
- 2.33 - Size reduced version of 2.31

Series II Support begins.

- 3.07 - FaaastROM release. Single ROM. HC2 and 8/x require U42/4711 PAL. C= standard SCSI direct and RDB supported. SCSI reselection is default on. Support utilities are GVPMount and GVPCtrl. Will not work with non-DMA'able RAM. Driver can handle maximum MaxTransfer value permitted by AmigaDOS. ($2^{31} - 1$ bytes = MaxInt) Manual GVPprepSCSI utility can set maxtransfer differently if needed. Series I A500 requires double ROM version. Use of Last Disk RDB flag supported. Thirty second wait at SCSI ID#0 for slow drives. Five second check on SCSI ID's 1-6. Only recognizes A500 and A2000 SCSI controllers. Two-ROM version available for Series I A500 units.
- 3.12 - SCSI bus scan routine has been altered to speed up the boot process and permit previously unrecognized units to be recognized with the single support utility GVPscsiCtrl; ICD AdSpeed cache is supported by the ICDCache option. Non-DMA'able RAM is supported; it must be located outside of Zorro II address space (Above the lower 16MB of address space.) Non-DMA'able RAM includes extended RAM on the A3050 Accelerator. May appear to support, but does not fully support Combo Accelerators.

- 3.14 - first release intended for the Combo Accelerator. Clears up potential extended-RAM and on-board SCSI conflicts. Has FaaastROM 4.0 (marketing name) speed enhancement code with Western Digital A component.
- 3.15 - Designated FaaastROM 4.0 by marketing. Up to 33% speed increase is possible on Series II controllers that have a Western Digital or AMD 33C93A chip. Uses J2 on 2/3 and J11 on HC8-II or J6 on HC-II. Jumpers must be moved together. Not all board can use the jumper setting, either due to the ID jumpers being not present, the WD controller chip is not an the 'WD33C93A' version, or because the Amiga clock lines are not clean enough to handle the doubling of the clock to the Western Digital SCSI chip. No jumpers are changed on Combo Accelerators. Unless other changes become necessary, this is to be the last version that will support the Series I controllers.
- 4.3 - First release of a version-4 driver. Series I support and 1.3 removable-media kluge have been removed. First support for G-Force 030 SCSI host adapters. Support for removable media relies upon the new release of FastFileSystem contained on the Commodore 2.0 Install disk. GVP FaaastPrep and G-Force disks have been updated also. The proper size of the new FFS file is approximately 22K. Product codes for the G-Force Accelerators are now included in this revision.
- 4.4 - Intermediate version to correct problems experienced with the Q120/Q240 LPS drives. This fix will work in most cases. The problem was realized when multiple drives were used on the Series II host adapters. Other manufacturers have also experienced problems with these models. It is recommended that the Last LUN flag be set on the 120/240LPS units for best results. This revision also does not reject odd-length SCSI I/O requests.
- 4.5 - Fixes Q120/240 drive problem. Requires jumper changes to support these Series II models:

SCSI (& w/RAM) Disk controller ONLY with WD33C93 or no ID jumpers (HC-J5,6,7 & HC8-10,11,12) use J2 Pin 1/2 Shorted & ID jumpers, if present, not shorted.

With AM or WD33C93A SCSI chip:

A500+, HC0, HC8	- J2: 2/3 Shorted
Combo22/33	- Unchanged
G-Force 030	- CN15: 1/2 Shorted
A530	- CN18: 2/3

Some Combo22/33 may still experience problems with the Q120/Q240 - currently this can't be fixed.

'Omni' Designations

The 'Omni' designations are mixtures of the AT and SCSI driver revisions listed above. AT code is burned 'high', and SCSI code is burned 'low'. Revision 4 68030 cards can not use the 'high' burned AT code. Revision 7 and Revision 8 68030 cards should have J17 shorted (default) in order to read the 'high' code. All SCSI code is readable by all SCSI cards except as noted on the previous page.

Omni 3.0 - 3.0 AT/3.12 SCSI
Omni 3.1 and 3.2 - not released
Omni 3.3 - 3.2 AT/3.12 SCSI
Omni 3.4 - 3.3 AT/3.12 SCSI
Omni 3.5 - 3.3 AT/3.14 SCSI

FaaastROM 4.0

Designates 3.3 AT/3.15 SCSI ROM code.